ANNUAL REPORT OF THE
VIRGINIA DEPARTMENT OF CONSERVATION
AND RECREATION

VIRGINIA WATER QUALITY IMPROVEMENT FUND COOPERATIVE NONPOINT SOURCE POLLUTION PROGRAM and the CLEAN WATER ACT SECTION 319 NONPOINT SOURCE POLLUTION PROGRAM

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

COMMONWEALTH OF VIRGINIA
RICHMOND
JANUARY 2002

Annual Report

VIRGINIA WATER QUALITY IMPROVEMENT FUND COOPERATIVE NONPOINT SOURCE POLLUTION PROGRAM and the CLEAN WATER ACT SECTION 319 NONPOINT SOURCE POLLUTION PROGRAM

David G. Brickley
Director of the
Virginia Department of Conservation and Recreation
in cooperation with member agencies of the Virginia Nonpoint Source Advisory Committee:

Chesapeake Bay Local Assistance Department
Department of Agriculture & Consumer Services
Department of Environmental Quality
Department of Forestry
Department of Game and Inland Fisheries
Department of Health
Department of Mines, Minerals and Energy
Department of Transportation
Virginia Cooperative Extension
Virginia Marine Resources Commission
U.S. Department of Agriculture Farm Services Agency
U.S. Forest Service
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to the
Governor
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INTRODUCTION

This report describes the Commonwealth of Virginia's efforts to control nonpoint source pollution, or polluted runoff, during the 2001 calendar year. In particular, the report describes nonpoint source pollution management program activities undertaken by the Department of Conservation and Recreation (DCR) and other cooperating agencies. These activities include nonpoint source pollution management program implementation, development and issuance of a request for proposals, submission of project proposals, and development and implementation of cooperative nonpoint source pollution control programs. In addition, this report identifies future funding needs for nonpoint source programs.

This annual report fulfills the legislative requirement under Section 10.1-2134 of the *Virginia Water Quality Improvement Act of 1997* (WQIA), Chapter 21.1 of Title 10.1 of the *Code of Virginia*, for an annual report to the governor and the General Assembly of the Commonwealth of Virginia on the implementation of the Virginia Water Quality Improvement Fund (WQIF). It also fulfills the annual reporting requirement under Section 319(h)(11) of the Federal Clean Water Act.

The WQIA under Section 10.1-2127.D., Chapter 21.1 of Title 10.1 of the *Code of Virginia* directs DCR to report each year to the Governor and the General Assembly on the implementation of cooperative nonpoint source (NPS) pollution programs in Virginia. In enacting the WQIA, the General Assembly pronounced that the restoration, protection, and improvement of the quality of state waters is a shared responsibility among state and local governments and individuals, and to that end, established the authority for cooperative programs related to nutrient reduction and other types of nonpoint source pollution. In order to accomplish this directive, DCR assists local governments, soil and water conservation districts (SWCDs), and individuals with technical and financial assistance made available through WQIF grants and other funding sources.

I. NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

Section 10.1-104.1. of the *Code of Virginia* states that DCR shall have the lead responsibility for the Commonwealth's nonpoint source pollution management program. This section also assigns responsibility for the distribution of assigned funds, identification and establishment of priorities of nonpoint source related water quality problems, and the administration of a statewide nonpoint source advisory committee.

In implementing the nonpoint source pollution program, DCR receives input from cooperating agencies on the Nonpoint Source Advisory Committee (NPSAC), This interagency committee is comprised of representatives of federal and state agencies. The mission of the committee is to serve as an interagency forum to facilitate effective nonpoint source pollution reduction and prevention programs that support the achievement and maintenance of beneficial uses of water throughout the commonwealth. NPSAC is comprised of representatives from the following agencies: Chesapeake Bay Local Assistance Department (CBLAD), Department of Agriculture & Consumer Services (VDACS), Department of Conservation & Recreation (DCR), Department of Environmental Quality (DEQ), Department of Forestry (DOF), Department of Game and Inland Fisheries (DGIF), Department of Health (VDH), Department of Mines, Minerals and Energy (DMME), Department of Transportation (VDOT), Virginia Cooperative Extension (VCE), Virginia Marine Resources Commission (VMRCS), US Department of Agriculture Farm Services Agency (FSA), U.S. Forest Service (USFS), U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), U.S. Environmental Protection Agency (EPA), and the U.S.

Geological Survey (USGS).

A. Virginia Water Quality Improvement Act Of 1997

The *Virginia Water Quality Improvement Act* was passed during the 1997 legislative session of the Virginia General Assembly and signed into law on March 20, 1997. The Act established the Water Quality Improvement Fund (WQIF) to provide funding for water quality improvements throughout the commonwealth.

From FY1998 – FY2002, nonpoint source pollution WQIF funding totals $47,159,552. Activities funded through this program include agricultural best management practices (BMPs) cost-share assistance, nonpoint source pollution control implementation projects and funding support for the Conservation Reserve Enhancement Program (CREP). Table 1 summarizes annual WQIF funding.

Table 1. WQIF Funding FY1998-2002 for Nonpoint Source Pollution Control

Fiscal Year	*Deposits Available*	*Interest Earned*	*Totals*
98	5,000,000	194,669	**5,194,669**
99	8,390,000	873,063	**9,263,063**
00	20,584,606*	701,602	**21,286,208**
01	11,000,000	235,705	**11,235,705**
02	0**	179,907	**179,907**
Totals	**44,974,606**	**2,184,946**	**47,159,552**

*includes deposit approved by Secretary of Natural Resources
**there is no funding allocation for FY2002

B. Federal Clean Water Act of 1987

Section 319 of the Federal Clean Water Act requires that states develop and implement nonpoint source pollution management programs. DCR's role as the primary agency responsible for implementing the commonwealth's nonpoint source pollution management program was reaffirmed under Executive Order No. 23 (98) signed by Governor Jim Gilmore on June 29, 1998.

Virginia received approval of a major revision and update of the *Virginia Nonpoint Source Pollution Management Program* from the U.S. Environmental Protection Agency in December of 1999. The attainment of beneficial uses as measured by water quality standards compliance is the overriding purpose of pollution control activities identified in the management program. The program also identifies reportable milestones for a five-year time frame through which progress towards the achievement of stated goals can be reported and monitored. As required by Section 319 of the Clean Water Act, this annual report highlights program accomplishments that help the commonwealth meet the milestones identified in the management program.

II. PROGRAM ACTIVITIES

A. FY2001 WQIF Implementation Projects

Final FY2001Water Quality Improvement Fund implementation grants were selected in April. Table 2 is a list, by region, of approved projects and the funding amount for each project. Regional project managers were assigned to assist project sponsors. Total reductions from the 32 project funded in FY2001 are estimated at 7,208 lbs. nitrogen, 782 lbs. phosphorus, and 63 tons of sediment in the Chesapeake Bay. Southern Rivers reductions are estimated at 2,831 lbs. nitrogen, 260 lbs. phosphorus, and 30 tons of sediment.

Table 2. FY2001Water Quality Improvement Fund Projects

Chesapeake Bay Watershed		
Organization	***Title of Project***	***Funding***
Albemarle Co.	Albemarle County Stormwater Management Master Plan	100,000
Spotsylvania Co./DMME	Mitchell Mine Reclamation Project	75,000
City of Lexington	Wood's Creek Stream Restoration & Watershed Protection	48,588
Town of Stanley	Little Hawksbill Creek Stabilization	2,500
City of Portsmouth	Regional SW Retention Basin-Portsmouth Corporate Center	100,000
Middle Peninsula PDC	On Site Wastewater Improvements Projects	50,000
City of Manassas Park	Conner Center Pond #6 Retrofit	21,000
Nelson Co. Government	Nelson County SWM Program	21,750
City of Hampton	Modifications to Coliseum Lake for Enhanced Water Quality	84,862
City of Norfolk	Lenox Water Quality Improvement Project	100,000
James River Association	Riparian Lands Restoration/Protection	41,300
Va. Tech	Nutrient Management for Homeowners-C. Bay	50,000
Loudoun County	Loudoun Co. On Site Sewage Disposal System Repair	50,000
Holmans Creek Citizen's WS Comm & LFSWCD	Holmans Creek Septic System Maintenance	50,000
Western Virgiia Land	Southwest Streams Partnership-Chesapeake	50,000
City of Lynchburg	Strategy for Responsible Development-Lynchburg	100,000
Prince William County	Riparian Restoration for WQ Improvement- Urban Areas	55,000
	Total Chesapeake Bay Funding	**$1,000,000**

Table 2. (Cont.)

Southern Rivers Watersheds		
Organization	***Title of Project***	***Funding***
Bedford County	Strategy for Responsible Development – Bedford County	100,000
Black Diamond RC&D/Big Sandy SWCD	Knox Creek Restoration Project	56,851
Black Diamond RC&D/DMME	Barbara Ann Coal Mine Reclamation	75,000
Daniel Boone SWCD	Indian Creek Waste Reduction Project	16,150
Franklin County	Smith Mountain Lake Park Shoreline Stabilization	43,016
Hands Across the Mountain, Inc.	Upper Powell River Restoration	125,000
Lonesome Pine SWCD	Guest River Restoration Project	100,800
McClure River Kiwanis Club	McClure River Restoration Project	79,000
Mountain Heritage, Inc.	Lick Creek Straight Pipe Elimination Project	50,000
New River-Highlands RC&D	Develop Model SWM Ordinance & Regional SWM Authority	60,167
Town of Bluefield	Upper Bluestone River Watershed Protection Phases 4&5	32,000
Town of Christianburg	Cambria Community (Crab Creek) Stream Bank Stabilization	62,016
Va. Tech	Va. Tech Duck Pond Retrofit/Stroubles Creek	100,000
Va. Tech	Nutrient Management for Homeowners-SR	36,750
Western Virginia Land Trust	Southwest Streams-SR	63,250
	Total Southern Rivers Funding	**$1,000,000**

B. WQIF Funding for the Agricultural Cost-Share Program

Agricultural best management practices (BMPs) are techniques (technological, economic, and institutional) that treat surface water runoff associated with cropland, pastureland and animal wastes. These BMPs are primarily implemented through the *Virginia Agricultural BMP Cost-Share Program* administered by DCR through local Soil and Water Conservation Districts (SWCDs). The Cost-Share Program offers an incentive to farmers and landowners (agricultural producers) to encourage the installation of BMPs on agricultural properties they manage. The commonwealth provides up to 75% of the cost of each BMP, a flat rate amount per acre, or a combination of a flat rate and 75% of the cost, not to exceed the individual annual funding cap. The state cost-share cap limits funding to an individual landowner in any given year to receiving a maximum of $50,000.

Since the inception Cost-Share Program in 1985, funding was provided through state general funds and federal Chesapeake Bay Implementation grant monies. More recently, the 1997 the Water Quality Improvement Act (WQIA) Fund, as supported by the governor and General Assembly, provided a

substantial increase in funding for the Cost-Share Program. This led to an unprecedented increase in the implementation of BMPs available through the Cost-Share Program. The number of farmers participating in the Cost-Share Program reached an unprecedented high of 1,711 during the 2001 fiscal year. This participation led to the installation of an unprecedented 7,140 BMPs during fiscal year 2001. As long as there is continued financial support for the program, the number of participating farmers is expected to continue to remain high.

As with the number of farmers, the number of acres under program management also generally increased and decreased with relative changes in funding. The number of acres reached a high of approximately 45,000 acres in 1991 and decreased thereafter. However, due to the recent increase in funding for the Cost-Share Program, the number of acres under program management increased to over 196,000 acres for fiscal year 2001. During the 2002 Program, it is expected that program participation and acreage, will be impacted by available program funding in the same relationship as in the past years.

Historically, the demand for cost-share assistance to install BMPs has outpaced available program funds. SWCDs report that funding is still not meeting the demand from agricultural producers requesting to install BMPs at this time.

The BMPs installed through the Incentive Programs reduce soil loss, nitrogen, and phosphorus entering streams and rivers, which adversely affect water quality. Each BMP has a different pollutant reduction factor, which is determined by the type of practice, location, and treatment of pollutants in the runoff. Between 1991 and 2001, there was a general correlation among the reduction of nutrients (*i.e.*, nitrogen and phosphorus) and soil losses, and all elements of the Cost-Share Program, including the amount of funding, participating farmers, acres under program management, and number of BMPs installed. During the 1991-2001 period, total reductions to state waters included:

- 14,483,701 pounds of nitrogen,
- 2,713,117 pounds of phosphorus, and
- 2,568,847 tons of soil.

A list of WQIF allocations to SWCDs for Agricultural Cost-Share Program implementation for FY 2001 can be obtained in the *Third Annual Virginia Agricultural Best Management Practices Program Report* from DCR.

III. COOPERATIVE NONPOINT SOURCE POLLUTION PROGRAMS

This section describes cooperative nonpoint source (NPS) pollution programs between state, local governments, and individuals, as required under the WQIA, to restore, protect and improve the quality of Virginia's waters. Highlights of institutional state nonpoint source pollution programs, along with cooperative watershed initiatives, by river basin, are provided.

DCR manages and coordinates the implementation of a wide range of NPS pollution management programs. The majority of these programs are incentive-based, with technical and financial assistance provided to encourage voluntary participation by various stakeholders. The programs described in this report have been fully integrated into cooperative NPS pollution management programs and comprehensive watershed-based initiatives throughout the commonwealth.

During 2001, development of new cooperative NPS pollution programs, along with strengthening of existing partnerships, significantly enhanced the effectiveness of the commonwealth's NPS pollution management program. Accomplishments of specific programmatic performance measures are detailed below.

A. Cooperative Programs Administered by DCR

1. The Virginia Conservation Partnership

Virginia's 47 Soil and Water Conservation Districts have served the commonwealth for more than 60 years. The partnership of natural resource conservation agencies is one of mutual reliance with each partner fulfilling a niche that supports agency missions and support of partner goals. This cooperative relationship provides efficient delivery of natural resource programs and services to landowners. Along with DCR, the primary partners of the Virginia Conservation Partnership are Soil and Water Conservation Districts (SWCDs), and the US Department of Agriculture Natural Resources Conservation Service (NRCS). SWCDs continue to provide local connections with landowners and the farming community. NRCS provides technical expertise for the installation of conservation practices. DCR supports SWCDs with training, guidance, and financial assistance to help achieve the commonwealth's water quality goals.

During 2001, Soil and Water Conservation District Boards, with support from DCR staff, conducted hundreds of monthly board meetings and sponsored hundreds of technical training sessions and conservation demonstrations, tours, and events.

Beyond the primary conservation partners, other agencies and organizations participate in conservation partnership initiatives as appropriate. Other active partners include the Virginia Department of Forestry (VDOF), Virginia Cooperative Extension (VCE), Virginia Department of Agriculture and Consumer Services (VDACS), the Chesapeake Bay Local Assistance Department (CBLAD), and the Virginia Department of Game and Inland Fisheries (DGIF). Examples include support of the Riparian Restoration Directive, delivery of agricultural planning required by the Chesapeake Bay Preservation Act, assistance with implementation of the Virginia Agricultural Stewardship Act, the Conservation Reserve Enhancement Program (CREP) and promotion of the Forest Stewardship program. The conservation partnership provides a framework for cooperation at all levels of natural resource conservation. Through this partnership citizens benefit from an organization and network that minimizes duplication and satisfies federal, state and local natural resource conservation goals.

To further support SWCD Bay restoration efforts, DCR distributed $280,000 in grants to Soil and Water Conservation Districts annually to pursue cooperative projects that further the planning, development, and implementation of the Tributary Strategies. SWCDs worked closely with the state in developing the Strategies, and collaborated extensively with local governments and other river basin interest groups. These SWCD initiatives resulted in the establishment of basin-wide coalitions to facilitate unified tributary strategy development and implementation of programs to achieve strategy goals. New grants emphasize formation of conservation coalitions to provide long-term leadership and guidance to continue local delivery of water quality programs.

2. Stormwater Management

The goal of the stormwater management (SWM) program is to control the quantity and quality of stormwater runoff to protect downstream properties and reduce NPS pollution. DCR is charged under Section 10.1-603 of the *Code of Virginia* to provide technical assistance, training, research, and coordination in stormwater management technology to local governments and citizens for the protection of properties and reduction in NPS pollution. The 1998 amendments to the Stormwater Management Regulations and the federal National Pollutant Discharge Elimination System Phase 2 Rule have prompted continued interest in the local adoption of this voluntary program. In an effort to provide greater levels of service to local governments, DCR's stormwater program staff completed the first Virginia Stormwater Management Handbook in 1999. Over 800 handbooks were sold in 2001, with the rate of sales increasing each month. This document provides local governments, SWCDs and citizens with valuable technical information on the SWM program and the various methods employed to protect properties from increases in rates of runoff and NPS pollution. DCR staff have continued to conduct technical stormwater training as part of the Erosion and Sediment Control Training and Certification Program. Requests for additional training have led to the development of an advanced stormwater management course to be made available to local government officials, consultants, and the general public. This training is currently under development. DCR SWM program staff assisted in the adoption of 3 additional local government stormwater programs to bring the statewide total to 18 local stormwater management programs adopted pursuant and consistent with state law and regulations.

Staff is currently working with additional localities, some of which are developing watershed-based programs that actively pursue adoption of a stormwater program. Specific Stormwater Management Program activities included: responding to technical assistance requests and complaints; conducting local program visits; preparing summaries of local stormwater program status; performing locality assistance visits; conducting state agency plan reviews and state agency site inspections.

3. Erosion and Sediment Control

The Erosion & Sediment Control (ESC) Program oversees the statewide implementation of the Virginia Erosion and Sediment Control Law and Regulations by localities, conservation districts, state and federal agencies, and private companies. These statutes provide an integrated framework for state and local regulation of land use conversion activities to control soil erosion, sediment deposition, nonagricultural runoff, and localized flooding, and in turn, prevent degradation of property, water quality, and other natural resources. DCR environmental engineers throughout the state provide assistance through ESC plan review, on-site inspection, enforcement support, local urban program planning, and provision of technical and regulatory guidance and training.

Significant changes to the state statutes since 1997 include the addition of (1) DCR oversight authority over regulated activities by private utility, pipeline, and railroad companies, (2) a local option to require ESC plans for "erosion impact areas" not associated with active land development, and (3) the requirement to designate a “Responsible Land Disturber,” for each site who will be in charge of and responsible for carrying out land-disturbing activity covered by an ESC plan. These changes have enhanced the tools available to DCR and local governments to deliver a consistent program.

A major focus of the ESC Program efforts over the past year has been to train and certify government officials and private contractors and consultants who implement ESC across the state. Approximately 4,500 people participated in DCR’s training program during 2001.

4. Coastal Nonpoint Source Pollution Control Program (CNPCP)

During 2001, Virginia received full federal approval of the Coastal Nonpoint Pollution Control Program (CNPCP). A signing ceremony was held in July 2001 at the Hall of States in Washington, D.C. Representatives from Virginia, NOAA and EPA were in attendance and are signatories on the certificate marking the accomplishment.

A key program accomplishment that helped the commonwealth attain full program approval was creation of a clean marina program, which was initiated with FY 1999 Section 6217 funding from the National Oceanic and Atmospheric Administration and the Department of Environmental Quality. The Secretary of Natural Resources made the Virginia Clean Marina Program formal program announcement in January 2001. In 2001 the following activities were accomplished:

- Formal announcement of the program with approximately 80 people in attendance.
- The first of four workshops occurred on March 27, 2001 with approximately 60 people participating.
- The project contractor, Virginia Institute of Marine Science, for the Clean Marina Program and DEQ developed websites for clean marina information dissemination.
- A clean marina display was developed and was used at several boat shows in February and March 2001.
- The development and field testing of clean marina evaluation criteria was completed. It is anticipated that the criteria will be revised as the program evolves.

In addition to the Clean Marina Program, Virginia achieved program approval through several specific projects that addressed program approval conditions related to instream and riparian issues and hydromodification activities. In particular, DCR has contracted with Center for Environmental Studies at Virginia Commonwealth University to develop a protocol for development of reference reaches in Virginia that will consider physical, habitat and biological characteristics of a stream segment. This information will provide the basis for accomplishing specific objectives set forth in the Hydromodification chapter of the Nonpoint Source Pollution Management Program. The intent of the project is to improve BMP implementation in a manner that protects and helps restore the health of streams.

5. Nutrient Management

DCR's Nutrient Management Program was established in 1989. The program's purpose is to encourage proper land application and efficient use of fertilizers, manures, sewage sludges and other nutrient sources utilized for agricultural and urban landscape purposes in ways that protect and improve the quality of Virginia's ground and surface waters. DCR works closely with large and small agricultural operations to manage agricultural nutrients. DCR also educates urban landowners about the impacts of nutrient runoff from lawns, gardens, golf courses, parking lots, and other landscaped areas.

DCR uses various strategies to encourage proper land application of fertilizer, manure, and sewage sludge for agricultural and horticultural purposes. DCR's nutrient management specialists provide

technical assistance to landowners. These specialists develop site-specific nutrient management plans (NMPs) with cooperating farmers, assist farmers with manure testing for nutrient levels, calibrate nutrient application equipment, and coordinate soil nitrate testing in agricultural crop fields. DCR's nutrient management specialists also assist localities in developing nutrient management programs and ordinances. DCR certifies private and public sector nutrient management planners, and conducts training sessions and examinations as authorized in §10.1-104.2 of the *Code of Virginia*.

a. Poultry Waste Management Act Nutrient Management Plans – The Poultry Waste Management Act (HB 1207) was passed by the General Assembly and was signed by the governor in 1999. This legislation required DEQ to develop regulations for poultry waste. The regulations, effective on December 1, 2000, required poultry operations with at least 11,000 turkeys or 20,000 chickens to file a registration statement for the Poultry Waste VPA General Permit by October 1, 2001.

These operations must comply with a DCR approved Nutrient Management Plan, which includes requirements for proper storage of poultry litter. A total of 1,068 nutrient management plans were approved by DCR for the poultry permit, representing essentially all known operations in the state projected to need the permit. Poultry companies operating in Virginia were very progressive in prompting growers to have nutrient management plans developed and approved prior to the deadline. The law and regulations also require NMPs developed after October 1, 2001 to limit the application of phosphorus to crop nutrient needs or crop removal, whichever is greater. For most operations, this provision will take effect when their nutrient management plan is first revised, which must occur every three years.

DCR also coordinated with DEQ, Virginia Cooperative Extension, the Virginia Poultry Federation, and individual poultry companies to hold training sessions for poultry growers. Attendance at these training sessions was mandated by the Poultry Waste Management Regulations. Burial of daily mortality will not be allowed under the general permit regulations. Also, the construction of new poultry operations in the 100-year flood plain will not be allowed.

b. Nutrient Management Certification Program - As of August 2001, 246 people have become certified to develop nutrient management plans in Virginia. Planners represent fertilizer, seed, and pesticide suppliers, private consultants, employees of Soil & Water Conservation Districts, DCR, the Department of Environmental Quality, and a few miscellaneous categories. Funds to offset a portion of the fees charged by private planners are available through the Cost-Share program and by Invitations-to-Bid (contracts). These programs provide incentive to private planners to write plans and the opportunity to the farmer to get plans written by the private sector at a lower cost. Private planners have reported 109,632 acres of plans during the last reporting period.

c. Development of Virginia Phosphorus Site Index – Version 1.0 of the Virginia phosphorus site index has been released. The index considers phosphorus soil test levels and runoff characteristics of fields. The index estimates phosphorus contributions to surface waters for phosphorus transported as particulate forms, dissolved orthophosphate, dissolved organic forms, and subsurface flow dissolved forms. The index has been incorporated into the Virginia NRCS 590 standard for nutrient management. DCR will be field testing Version 1.0 of the index during the next year to provide feedback to the development team and to assist in evaluating the potential for full implementation in Virginia. If the final EPA CAFO regulations require phosphorus-based nutrient management plans, Virginia will likely use either the phosphorus index or phosphorus threshold approach, or a combination of both these approaches identified in the proposed rule.

d. Urban Nutrient Management - Urban nutrient management activities during the reporting period included maintenance and renewal of existing water quality improvement cooperation agreements,

promoting the agreements to additional potential cooperators, promotion and distribution of urban nutrient management marketing materials, and finalization of the golf course nutrient management plan format. There are now water quality improvement agreements with 46 retail urban fertilizer market owners and 18 lawn service companies. The lawn care agreements cover approximately 17,000 acres of

turf grass in the state as indicated on annual reports to the department as required by the agreements. These agreements require cooperating firm to develop and implement a nutrient management plan.

A format for golf course nutrient management plans was developed by adapting the standard agricultural plan format. Using the golf course format as a template, a nutrient management field specialist is developing golf course plans and working with the private sector to initiate writing plans.

e. Poultry Waste Alternate Use Project - Harmony/Shenandoah Valley has constructed a processing plant to convert raw poultry litter into a granulated fertilizer product. This project is in cooperation with Rocco (now Cargill) and Duke Energy. The project also uses a gasification process to convert poultry litter into energy to power the granulation process. WQIF funding of $500,000 was provided to match contributions. The plant is now fully operational and producing products.

6. Floodplain Management

The Floodplain Management Section of DCR supports all efforts that promote sound floodplain management practices. This includes federal state and local initiatives, and specifically the efforts of the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). The NFIP is the only widely available source of flood insurance to the citizens in the Commonwealth; the basic homeowner's insurance policy does not cover flood damages. For flood insurance to be available through the NFIP, the commonwealth and individual localities must agree to participate in sound floodplain management activities that meet the minimum standards of the NFIP and its regulations. Local governments must adopt a NFIP compliant regulation and commit to the enforcement of that regulation. There are 268 communities that currently participate in the NFIP; 15 local governments do not participate. In the 1999 report there were 265 NFIP participating communities. Within the past eight years the number of communities participating in the NFIP has increased from 258 to 268. Currently there are over 76,400 flood insurance policies (compared to about 67,000 in 2000) in Virginia for a total coverage for flood damage of more than $10.4 billion (compared to about $9 billion in 2000).

DCR's Floodplain Management Program staff provides leadership, training and technical assistance to local governments to ensure that local floodplain programs meet or exceed the minimum standards of the NFIP. The program also supports all floodplain management initiatives within the commonwealth, including initiatives of the U.S. Army Corps of Engineers, NRCS Emergency Watershed Protection (EWP) Program, FEMA's Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMAP), and Project Impact.

DCR also administers the Flood Prevention and Protection Assistance Fund (FPPAF). The intended use of the fund is for the commonwealth to provide localities with up to a 50% match for local flood prevention or protection projects or studies. Such projects can include floodplain studies and mapping, structural protection (floodwalls and channel improvements), property acquisitions (ownership transferred to localities and property permanently deeded to "open space"), relocations and/or elevation. The target mitigation projects are repeatedly flood-damaged structures. The FPPAF has been used as matching funds to support the local

cost share of flood prevention and protection projects implemented under FEMA's Hazard Mitigation Grant Program that is administered by the Department of Emergency Management**.**

Heavy rains impacted southwest Virginia on Sunday, July 8, 2001 and caused significant flooding in Tazewell County, Virginia. On July 9 Governor Gilmore issued an emergency declaration for Tazewell County. At the request of the governor, President Bush declared a major disaster for Virginia on July 12. Further, on July 28-29 numerous showers and thunderstorms including some heavy rains generated rainfall amounts of up to 5-6 inches in other parts of southwest Virginia. These storms caused extensive flooding in portions of Buchanan, Dickinson, Lee, Russell, Scott, Smyth, Washington, and Wise Counties. One man was killed when his home was swept away by flood waters from Stony Creek in Scott County. On July 31, 2001 Governor Gilmore requested FEMA to extend the incident period and include eight additional counties (noted above), which was granted by the FEMA Director on August 1. Additional locally heavy rains on August 11-12 caused new flooding in Wise and Dickenson Counties.

DCR's Floodplain Engineer assisted FEMA and the Virginia Department of Emergency Management (VDEM) during the response and recovery operations that were based at the Disaster Field Office (DFO) in Tazewell, VA. DCR's role was primarily to assist local officials with assessing flood damages (as requested) and to evaluate local floodplain management programs for compliance with local ordinances, the Virginia Uniform Statewide Building Code (relative to floodplain development) and the National Flood Insurance Program (NFIP) regulations. DCR also provided support to FEMA for identifying and scoping prospective flood mapping studies in areas with critical needs for updated flood maps. The DFO closed on September 24, 2001.

During 2001, there were two staff vacancies in DCR's Floodplain Management Program staff which had an impact on the number of technical and planning assistance contacts/visits and the number of permit applications that the program could conduct. The impact of these vacancies were compounded by the Program staff responding to the flooding disasters in southwest Virginia. Despite these setbacks, the Program was able to:

- Respond to over 200 technical assistance requests;
- Conduct and participate in 4 training workshops and conferences on floodplain management;
- Conduct 4 community assistance visits;
- Represent the commonwealth's interest at 11 of FEMA's flood mapping/study coordination meetings that were conducted in Virginia with local officials in communities that were planned to be remapped; and
- Review over 300 applications under the 401/404 Joint Permit Application process and VDOT's Inter-Agency Coordination process.

DCR staff worked with FEMA and other federal and state agencies out of the Tazewell, VA Disaster Field Office supporting the response and recovery efforts for the July floods from July through early September. A very brief overview of DCR activities in this response and recovery effort follows:

- Performed preliminary and secondary damage assessments in 5 communities;
- Conducted and provided oversight for substantial damage determinations on over 100

structures in the impacted areas; and

- Conducted several meetings and technical contacts on NFIP compliance, floodplain enforcement, flood mitigation strategies and planning for local officials involved in the response and recovery efforts.

7. Shoreline Erosion Advisory Service (SEAS)

DCR's Shoreline Erosion Advisory Service (SEAS) promotes environmentally acceptable shoreline erosion control measures to protect private property and reduce sediment and nutrient loadings to state waters. The SEAS Program was expanded in 1993 to provide landowners, local governments, and environmental agencies with technical advice and assistance related to streambank erosion and riparian buffer problems. The program also promotes research for improved shoreline management techniques to protect and enhance Virginia's shoreline resources.

Since creation of SEAS in 1980, DCR has provided technical advice for control of shoreline erosion to more than 7,000 clients. Clients include landowners, local governments, and environmental agencies. During 2001, DCR's SEAS Program completed 168 site evaluations along approximately 21 miles of shoreline. Staff also provided 10 oral presentations regarding the services of the SEAS Program.

8. Public Beach Program

DCR provides technical advice to localities with public beach maintenance and improvement to enhance recreational opportunities for the state's citizens and its visitors. DCR provides staff assistance to the Board on Conservation and Development of Public Beaches (Public Beach Board). The Public Beach Board evaluates the financial needs of localities with public beaches and administers a matching grant fund. The fund provides 50% cost-share to localities to implement projects to conserve, protect, improve, maintain, and develop public beaches. The board provided $230,000 in matching grant funds to the following localities:

- City of Hampton
- City of Norfolk
- City of Virginia Beach
- Gloucester County
- York County
- Town of West Point

9. Total Maximum Daily Load (TMDL)Program –Nonpoint Source Impaired Waters

The Total Maximum Daily Load (TMDL) program is mandated by the federal Clean Water Act and the Virginia Water Quality Monitoring, Information and Restoration Act. It is designed to identify waters which are impaired and not meeting water quality standards, determine the sources of pollutants causing the impairments and determine the amount of pollutants that a particular stream segment can receive and meet water quality standards. As identified in the ten-year implementation plan for the TMDL program developed for the governor and General Assembly in November 2000 by DEQ, it is estimated that 648 TMDL plans will have to be completed by the year 2010. This number of plans may be conservative, as new impaired waters are likely to be added to the TMDL list during the decade. The report estimated the total cost of developing the TMDL plans and

implementation plans at $59.3. This figure does not include the cost of implementation which the report estimated could top $500 million over the next 10-15 years. Through a Memorandum of Agreement with DEQ and through responsibilities outlined within the *Code of Virginia*, DCR has taken a lead role in the development of TMDLs for waters impaired by nonpoint source pollution.

The TMDL program is ultimately a three-step process to correct impaired water quality segments. The TMDL plans themselves are technical documents intended to scientifically determine the pollutant loading reductions, which are expected to be required within a watershed for that watershed to attain water quality standards. Once the TMDL plans are developed, they will provide a target pollutant loading reduction for each contributing pollutant source (i.e. - 40% reduction in nitrogen and phosphorus loads to the Chesapeake Bay). A separate implementation plan will then need to be developed to identify how the pollutant reduction will be attained. These implementation plans will identify specific best management practice (BMP) needs and projected cost estimates, much as has been done in a similar fashion in the tributary strategy development. Once these implementation plans are developed, financial resources will be required for their implementation. The third and final step in the TMDL process is the actual implementation of the needed corrective actions and the tracking of implementation and monitoring of water quality improvements.

Approximately 50 TMDL plans have been completed or are under development (see further detail in the Department of Environmental Quality TMDL update). Most of the TMDL plans have developed through contractual third parties. Procurement and management of the contractors has primarily been handled by central office DCR and DEQ TMDL staff along with other programmatic TMDL development activities. Contractors have also required extensive assistance from DCR central and regional office staff support to complete the necessary work. Implementation plans have been completed on 13 impaired segments, which were contracted and managed by DCR. These TMDL implementation plans were among the first to be developed nationwide and have received positive review from EPA and other states.

Soil and Water Conservation Districts will lead the technical assistance aspects of the implementation plans and funds for both agricultural and residential (correction of deficiencies with on-site sewage disposal systems) BMPs will be made available through the Cost-Share Assistance Program along with other state, federal and local assistance programs. The plans specify the types and number of BMPs that need to be implemented over a five-year period with attainment of the water quality standard anticipated in ten years.

DCR regional watershed staff assist in providing technical local watershed information to contractors during TMDL and implementation plan development, coordinate public involvement and stakeholder participation in TMDL development activities, and manage contractor TMDL development activities. Regional watershed staff will also coordinate implementation of the TMDL implementation plans. These activities are critical to the overall success of the TMDL program and to achieve the ultimate goal of restoring impaired water segments.

10. Virginia Adopt-A-Stream Program

Under Section 1-105 of Chapter 1 of the 1998 Special Session I, Virginia Acts of Assembly, DCR has been charged to develop and implement the Virginia Adopt-A-Stream Program. The program is a statewide litter education and cleanup campaign aimed at promoting citizen-based stewardship of the commonwealth's water resources, while reducing the

amount of litter entering Virginia's waterways. It also promotes watershed awareness, environmental education, citizen outreach, and community capacity building. The Adopt-A-Stream Program, administered through DCR, began in July of 1998 and has been evolving to include various components, reaching across the Commonwealth to include a very diverse constituency.

In 2001, several aspects of the Adopt-A-Stream Program were enhanced and expanded. Participation in the waterway cleanup and adoption component grew by approximately 30%, with the adopted shoreline mileage increasing by 19%. The estimated number of stenciled storm drains increased by 49%. The success of previous white goods collection events was carried forward to the Fall of 2001, with several well-received events occurring in Buchanan County. The Adopt-A-Stream Program continues to be very popular throughout Virginia, with an increasing diversity in program participants.

a. **Waterway Adoptions/Cleanups** - For the year 2001, there have been 52 new local program adoptions of 78 additional miles of stream, river, bay, and lake shoreline throughout the commonwealth. Along with these adoptions, there have been 131 documented cleanup events in 2001. This effort has resulted in a total of 206 local adoptions, 465 adopted shoreline miles, and 328 cleanup events throughout the commonwealth, since July of 1998.

b. Storm Drain Stenciling - This component of the Adopt-A-Stream Program has experienced substantial growth in 2001. Storm drain stenciling involves spray-painting stenciled messages adjacent to storm sewers in order to heighten citizen awareness and educate the public on the relationship between stormwater runoff and nonpoint source (NPS) pollution. A stenciled storm drain serves as a reminder of the connection between paved surfaces and nearby waterways. Over the past year, 27 storm drain stenciling kits were distributed to 12 groups throughout Virginia, resulting in as many as 270 stenciled storm drains. Since this program component began in Spring 2000, 61 storm drain stenciling kits have been distributed to citizens, neighborhood associations, and other civic groups, resulting in a possible 610 stenciled storm drains. An important program enhancement has been the development of Spanish-language storm drain stencils. A survey was conducted by DCR during July and August 2001 to identify the demand for Spanish storm drain stencils. Twenty-three percent of the survey respondents indicated a need in their area. DCR created an ad hoc advisory committee, comprised of DCR and several individuals fluent in Spanish to assist in development of Spanish-language materials. After a series of ad hoc advisory committee meetings, a consensus was reached regarding the stencil wording. Due to the variety of Spanish dialects, an effort was made to make the stenciled message as versatile and meaningful as possible.

c. White Goods Collection/Disposal - A white goods collection event, held in early November 2001, was coordinated with the newly formed Big Sandy Soil and Water Conservation District (BSSWCD). The generic term "white goods" collectively refers to any large household appliance, such as refrigerators, hot water heaters, washing machines, clothes dryers, freezers, and stoves. BSSWCD was subcontracted to conduct the event(s). The Knox Creek Watershed, in Buchanan County, was targeted for this year's activity. Funds secured by DCR, through the Litter Control and Recycling Fund Advisory Board for the Adopt-A-Stream Program, will be transferred to BSSWCD to pay for the "buy-back" of improperly disposed white goods. Up to 500 items can be paid for under this year's grant. Thus far, one event was held, enabling 320 white good items to be collected. Another such event was scheduled for early December 2001. So far, 1,956 white good items have been collected through this innovative Adopt-A-Stream Program component.

Other program enhancements include the development of Adopt-A-Stream Program certificates to recognize the efforts of groups and/or individuals and the creation of an exclusive Adopt-A-Stream e-mail

address (adoptastream@dcr.state.va.us) to provide improved public access to the program.

Through DCR's partnership with the Environmental Alliance for Senior Involvement (EASI), volunteers from eight associated Virginia Senior Environmental Corps (SEC) offices were trained in the stewardship of the commonwealth's water resources through involvement in the Adopt-A-Stream Program. Since then, active seniors have continued to educate and assist others to become more involved in Adopt-A-Stream activities.

Another notable event was the Boy Scouts of America National Jamboree, which was held at Fort A.P. Hill from July 23 - 31, 2001. As the centerpiece of DCR's water quality exhibit, the Virginia Adopt-A-Stream Program served as a model for hands-on community watershed stewardship activity, which can be applied at the local level. Over 5,000 scouts from across the United States and abroad were educated on litter awareness and local watershed stewardship efforts.

11. Citizen Water Quality Monitoring

The Department of Conservation and Recreation continued its cooperative efforts with the Department of Environmental Quality and the Izaak Walton League, Virginia Save Our Streams Program to support citizen monitoring efforts, promote appropriate quality assurance and quality control and establish methods for data use and assessment. Together, the agencies and the Save Our Streams Program achieved the accomplishments listed below.

a. Supported Citizens for Water Quality (CWQ), an informal forum of grass roots organizations interested in water quality monitoring and water quality issues:

(1) On March 17, 2001, CWQ held a quarterly meeting at Maury Glen Park in Buena Vista. Approximately 30 people attended, mostly citizen monitoring coordinators from around the state, to hear updates, swap ideas, learn about the newly introduced modified SOS monitoring method and share bowls of brunswick stew. Attendees heard an update on the Adopt-A-Stream Program and DEQ gave an update on the use of citizen data in DEQ water quality reports. After lunch the group, donned waders and listened while VA SOS explained the modified monitoring method. Use of the new method will make citizen-generated data more useful for both DEQ and DCR.

(2) CWQ, held its annual meeting at UVA on September 22, 2001. DCR, VA SOS, and DEQ, planned the event that had over 65 attendees, representing more than 30 community watershed organizations. Speakers described opportunities for citizen involvement in the Watershed Roundtables, trained monitors in water quality monitoring quality assurance procedures, explained Virginia's water quality standards, and promoted volunteer opportunities. DCR watershed materials, including the Watershed Connections video, were provided to attendees in appreciation of the excellent work citizen volunteers contribute to NPS management programs. The afternoon planning session demonstrated a continuing interest on the part of the attendees for the type of forum provided by the Citizens For Water Quality organization.

b. Supported Citizen Monitoring Councils –VA SOS; DEQ; and DCR met with representatives of several local water quality monitoring programs to review the monitoring program components and kick off the local citizen monitoring councils. Implementing citizen monitoring councils throughout Virginia is a joint venture of DCR, VA SOS and DEQ, aimed at assisting citizen groups as they collect data needed by the two cooperating state agencies. Virginia's water quality planning efforts, such as the

TMDL program, will benefit by citizen groups contributing data collected under quality assurance and quality control plans. Washington and Lee University prepared GIS maps of the various watersheds for use by the local monitoring programs. Meetings were held with the Rappahannock River Conservation Council, Virginia's Explore Park (Upper Roanoke River), Friends of the Shenandoah River, Friends of the Holston River and with J.R.Horsley Soil and Water Conservation District to establish local citizen monitoring councils.

c. Developed, with The Alliance for the Chesapeake Bay, an Eastern Virginia Save-Our-Streams monitoring protocol, suitable for fresh water streams in Virginia's tidewater. Accomplishments this year include an inter-agency task force with representatives of Randolph-Macon College and the College of William and Mary, a test method and the selection of sites and volunteers for pilot monitoring events. Development of the Eastern Virginia method is expected to continue through 2002.

12. Environmental Alliance for Senior Involvement (EASI)

The partnership between the Department of Conservation and Recreation and the Environmental Alliance for Senior Involvement is encouraging Virginia's seniors to be more involved in improving the commonwealth's water quality and other environmental projects. Senior Environmental Corps (SECs) have been established in eight locations throughout Virginia in cooperation with a variety of host organizations such as Lynchburg College, Alliance for the Chesapeake Bay, Soil and Water Conservation Districts and local associations of senior persons. AmeriCorps*VISTA positions provide staff to the SECs. Volunteers were trained to promote the Virginia Adopt-A-Stream Program in their local areas and to map DCR state park trails using GPS technology. The program is enabling interested seniors to use their expertise and knowledge in helping and promoting the stewardship of Virginia's natural resources.

13. Virginia Water Monitoring Council (VWMC)

DCR, along with partner agencies, undertook support for the newly formed Virginia Water Monitoring Council. The council, consisting of water monitoring stakeholders in the state, seeks to foster cooperation and exchange of information among groups involved in all types of water monitoring. Stakeholders include federal and state agencies, such as USGS and the Virginia Department of Health, as well as Citizens for Water Quality. As a member of the steering committee, DCR provided funds for the council staff and participated in strategic planning, establishing goals for the organization. The council distributed an inventory of all water monitoring activities in Virginia including state, federal, and local activities, as well as, citizen monitoring efforts. In September, the council, with DCR, cosponsored the *8th Annual Watershed Management Conference* in Virginia Beach.

The VWMC provided $5,000 in scholarships to representatives of non-profit organizations to support attendance at the 8th Annual Virginia Watershed Management Conference. Scholarships defrayed the cost of conference attendance and enabled representative of approximately 30 grass roots organizations to participate in conference activities. Conference participation builds capacity for grass roots organizations and enhances their understanding of watershed and water quality issues. The scholarship funds were originally granted to VWMC from the EPA.

14. Conservation Reserve Enhancement Program (CREP)

The commonwealth's Conservation Reserve Enhancement Program (CREP) and the U.S. Department of Agriculture (USDA) Farm Services Agency (FSA) Conservation Reserve Program (CRP) jointly are targeting $91 million to restore 35,000 acres of environmentally sensitive land along many of Virginia's streams and rivers.

The commonwealth's CREP is intended to enhance the existing USDA CRP, providing financial incentives for agricultural land removed from production for a ten to fifteen year period. The CRP has enrolled approximately 70,000 acres in the program to date, and CREP will enhance the existing program by adding additional landowner incentives for land removed from production, provide additional funding for landowner implementation of conservation practices and provisions for purchase of dedicated conservation easements for established riparian restoration areas or restored wetland.

Sign-up for CREP began on June 5, 2000, targeting 25,000 acres in the Chesapeake Bay Watershed and 10,000 acres in the Southern Rivers Watershed. CREP will provide an avenue for the installation of stream fencing, alternative water sources, including hardened limited accesses, cropland filter strips and wetland restorations that will have minimum financial impact on agricultural producers. The installation of hardwood tree species within the CREP protected riparian areas will reduce runoff inputs of sediment, nitrogen and phosphorous to surface waters.

These plantings will jump-start the return of riparian tree species that provide temperature moderation and large woody debris necessary for benthic macroinvertebrate communities and diverse fisheries. As of September 30, 2001, sign-up and completion data reveals the following progress:

- Southern Rivers CREP area – 131 contracts completed, restoring 831 buffer acres and protecting over 92 miles of stream bank
- Chesapeake Bay CREP area – 127 contracts completed, restoring1, 478 buffer acres and protecting over 102 miles of stream bank
- Southern Rivers CREP area – a total of 560 contracts approved, covering 3,385 acres
- Chesapeake Bay CREP area – a total of 497 contracts approved, covering 6,054 acres

15. Karst Groundwater Protection Program

Administered by the Division of Natural Heritage, the Karst Groundwater Protection Program operates primarily in the western part of Virginia, where karst terrain is common. Karst is a term for the cavernous, sinkhole-prone topography that develops on top of soluble bedrock such as limestone, dolostone, and marble. In such a landscape, much of the drainage network lies underground. While subtle karst features are present locally in the Piedmont and Coastal Plain areas, much of the Valley-and-Ridge region of western Virginia is underlain by karst bedrock. Groundwater flows rapidly along fractures in bedrock enlarged by solution to form vast networks of interconnected underground conduits, including nearly 4000 known caves. This high permeability makes karst aquifers especially vulnerable to contamination. Many localities and individuals depend on karst aquifers for drinking water, and the caves and karst waters host astounding biodiversity. These factors make Virginia's karst region a worthy target for focused protection and pollution prevention efforts.

a. Overview of WQIF/Section 319 Karst Projects

Products delivered and under development as part of the program enhancement grant include:

- Source water assessment and protection workshops in cooperation with the Department of Health
- Fact sheets entitled *Karst Resources of the Upper James River Basin* and *The Madison Cave Isopod*
- Technical assistance and administration of karst remediation projects, including several sinkhole dumps

b. Karst Program Highlights

Karst Program staff enhanced the nutrient management program through presentations at trainings and at the Biosolids Use Advisory Committee, visits to specific sites for assistance in buffer delineation, and input into the revision of regulations to better address karst issues. Karst Program staff participated strongly in the EPA Region 3 Workshop "Source-water Assessments in Karst", presenting a seminar and leading a field trip. Staff presented draft versions of *A Sinkhole Classification Scheme for Land Use Planners* at several professional meetings, and is incorporating criticism and commentary into the final product. DCR's karst education staff delivered numerous Project Underground facilitator and teacher trainings throughout Virginia's karstlands, working on various projects in cooperation with the National Park Service, the State of West Virginia, and MacGillery Freeman, producers of the *Journey into Amazing Caves* Imax film.

DCR spearheaded efforts at remediation of a sawmill dump in Lee County that is producing severe water quality impacts to a spring along the Powell River. Karst program staff is coordinating a project using funds from the Cave Conservancy of the Virginias, the U.S. Fish and Wildlife Service, and the Tennessee Valley Authority to transport the sawdust for use as a beneficial amendment on mined-land soils. Staff continues to respond to potential impacts of utility projects on significant karst features through participation in the State Environmental Review Program. Responses include site visits, biological inventories, hydrological studies, and coordination with consultants.

16. Chesapeake Bay Program

Virginia's involvement in Chesapeake Bay water quality issues intensified in 2001 as execution of the Chesapeake Bay Agreement 2000 progressed. The Agreement (C2K) spawned the establishment of new initiatives and workgroups to address the many new commitments contained therein. Participation in Chesapeake Bay Program bay-wide committees (with Maryland, Pennsylvania and the District of Colombia) also was boosted, reflecting the degree of attention each of the signatories to C2K are placing on the agreement. Virginia estimated that its bay protection programs cost about $200 million annually (both state & federal sources), and to complete implementation of C2K, it will cost between $ 328 million and $ 4 billion by 2010. These figures reflect the costs of removing the bay from the federal list of impaired waters by 2010, which will mean upgrades at sewage treatment plants and installation of nonpoint source best management practices (BMPs) over much of the state's watershed. This is to be accomplished via rewritten Tributary Strategies, to be completed by 2003, which will develop more specific plans as to what BMPs are needed in which location. To help launch the new Tributary Strategy process, four public meetings were held in August 2001 to acquaint citizens with the latest water quality standards and to encourage that they take part in the upcoming planning processes.

Also, four more meetings were held in November 2001 with key nonpoint source implementation partners (Soil and Water Conservation Districts & USDA Natural Resource Conservation Service and Cooperative Extension) to reinforce their connections to the forthcoming preparation of Tributary Strategies.

C2K focuses considerable attention on land use decision-making and improving land use management in order to avoid land use activities that lead to nonpoint source pollution and water quality degradation. C2K helps strengthen the voluntary approaches to nonpoint source pollution prevention. Achieving the goals of C2K will ultimately require that practically every landowner be engaged in efforts to control adverse water quality impacts. While previous attention focused on farms and land developers, the land managers with comparatively less land and impact now must be brought into abatement strategies to address the significant cumulative affect they have on water quality. Within this group are commercial land owners (businesses, office and industrial parks), land planners, planning commissions & boards of supervisors, recreational land managers (including golf courses), and the hardest to reach of all, the average residential citizen with a lawn. Successful accomplishment of C2K means incorporating all of these stakeholders in such a way that they know how to improve management of their land and are willing to do so. A great deal of brainstorming and organizational work occurred in 2001 to effectively modify water quality programs to accommodate the goals of C2K. In 2002 these efforts will continue, but will have more impact on the landscape as the planning is completed and implementation occurs.

B. Cooperative Watershed Initiatives

DCR is charged in assisting in the development of local cooperative NPS pollution programs, in accordance with the Water Quality Improvement Act, Section 10.1-2124.B. of the *Code of Virginia*, as follows:

> *In order to restore, protect and improve the quality of all bays, lakes, rivers, streams, creeks and other state waters, and to achieve the pollution reduction goals...the Department [DCR] shall assist local governments, soil and water conservation districts and individuals in the control of nonpoint source pollution, including nutrient reduction, through technical and financial assistance...*

Furthermore, in accordance with Section 10.1-2127 A. - C.:

> *The Department [DCR] and a county, city or town...identified as contributing to the impairment or degradation of state waters may develop a cooperative program to address identified nonpoint source pollution impairment or degradation, including excess nutrients.*

The Water Quality Improvement Act continues by requiring DCR to:

> *…conduct an assessment of <u>the geographic regions</u> [emphasis added] where water quality is demonstrated to be impaired or degraded as the result of nonpoint source pollution and an evaluation of the basis or cause for such impairment or degradation; and enables DCR and localities <u>comprising all or part of any geographic region</u> [emphasis added]...to develop cooperative programs to address identified nonpoint source pollution impairment or degradation, including excess nutrients.*

The purpose of the cooperative NPS pollution programs is to maintain and/or restore water quality

standards in stream segments where NPS pollution is a significant loading factor. NPS pollution problems require locally-based remedies that address the unique, site-specific, and varied causes of NPS contaminants. Cooperative NPS pollution programs are combinations of programmatic tools and technical and financial resources of varying emphasis used to target water quality impairments in a given watershed and political jurisdiction. A cooperative approach to protecting water quality helps local stakeholders develop their capabilities individually and collectively to address local water quality impairments. The outcome of cooperative NPS pollution programs has been a combination of existing efforts and new opportunities that address specific water quality impairments and improvements, supported by the public and the numerous stakeholders.

With this legislative directive, DCR reaffirmed existing partnerships and continued to pursue new relationships through cooperative watershed initiatives. DCR's nine watershed offices aggressively sought to establish and solidify conservation partnerships during 2001 with local governments, state and federal agencies, conservation organizations, volunteers, landowners, and local industries and businesses (see Table 3 for office locations).

Table 3. **DCR Watershed Offices**

Office (Location)	***Phone***
Albemarle, Chowan and Coastal Watersheds (Suffolk)	(757) 925-2468
James Watershed (Henrico Co./Richmond)	(804) 527-4484
New River Watershed (Dublin)	(540) 643-2590
Potomac Watershed (Warrenton)	(540) 347-6420
Rappahannock Watershed (Fredericksburg)	(540) 899-4389
Roanoke Watershed (Chase City)	(804) 372-2191
Shenandoah Watershed(Staunton)	(540) 332-9991
Big Sandy and Upper Tennessee Watershed (Abingdon)	(540) 676-5528
York Watershed (Tappahannock)	(804) 443-6752

1. Chesapeake Bay Watershed

a. Shenandoah - Potomac Watershed

(1) The Potomac Watershed Roundtable was created in 2001 and it achieved a great deal in its first year. Specific accomplishments of the Roundtable include: developing recommendations to EPA on TMDLs; developing recommendations to the state on Shenandoah Potomac Interim Cap Strategy; and, providing recommendations to the General Assembly's Commission on the Environment on how to improve implementation of erosion and sediment control and stormwater programs. Currently active committees of the Potomac Watershed Roundtable include: Erosion and Sediment Control, Storm Water Management, Communications and Education, and the Shenandoah Potomac Cap Strategy.

(2) The Potomac Council sponsored a Potomac Forum in August of 2001. The Potomac

Council is made up of the six SWCD in the Potomac Watershed and the DCR Potomac Watershed Manager. The Potomac Watershed Forum was held on August 23rd, 2001, at The Clubs at Quantico on the Quantico Marine Corps Base in Quantico, Virginia. The forum was well attended with over 150 participants from local government, PDCs, SWCDs, NGOs, development industry, agriculture, wastewater and water authority, state and federal government. The forum provided a broad range of topics and speakers. The forum included four concurrent sessions covering topics on improving water quality through effective implementation of erosion and sediment control regulations, urban BMPs, watershed funding, and agricultural land preservation. All sessions were successful in providing new and useful information to attendees.

(3) Other significant activities accomplished during 2001 in the Potomac Watershed Office include:

- Development of an urban nutrient management strategy for the Potomac Watershed
- Development of criteria and standards for writing nutrient management plans for golf courses
- Development of criteria for writing nutrient management plans for common lands
- Development of contract language for maintenance contracts for urban turf areas
- Initiated development of Property Management Conference and Nutrient Symposium

Most of these items were developed not only for the Potomac Watershed, but for use throughout the state.

(4) Urban Nutrient Management Events were held in the Potomac Watershed in addition to these activities. These events include:

- **Potomac Watershed Urban Nutrient Management Seminar** - David Kindig, Nutrient Management Training and Certification Coordinator and Robert Shoemaker, Nutrient Management Specialist from the Potomac Watershed, presented an Urban Nutrient Management Seminar to Master Gardeners at the Bull Run Regional Library in Manassas on July 28. The purpose of the half-day seminar was to acquaint Master Gardeners with the Urban Nutrient Management Training Program and the importance of writing plans for homeowners. Master Gardeners received training on writing an Urban Nutrient Management Plan for homeowners, homeowner associations or commercial properties. Master Gardeners and their voluntary efforts through Virginia Cooperative Extension can play an integral role in bringing nutrient management to the urban sector. This is one of many efforts in the Potomac Watershed to expand the urban portion of DCR's Nutrient Management Program.

- **Property Managers Conference on Turfgrass and Water Quality** sponsored by DCR and Virginia Cooperative Extension was held November 8th at the Manassas Holiday Inn in Prince William County. The conference highlighted urban nutrient management plans and water quality agreements for local, state, and federal governments, office and industrial parks, homeowner associations, and lawn maintenance and landscape companies. Featured speakers at the conference were Virginia Turfgrass Council president, Bob Barksdale, and Virginia Tech turfgrass specialist, Dr. Dave Chalmers. Displays included sod farms, fertilizer dealers, lawn service companies, equipment dealers, private soil consultants and turfgrass seed companies.

  The conference was designed to educate individuals on implementation of water

quality agreements with the Department of Conservation and Recreation. Water quality agreements promote proper lime and fertilizer applications to turf to protect the environment. Water quality agreement guidelines are based on the Virginia Nutrient Management Standards and Criteria. Fertilization programs are reviewed by DCR nutrient management staff prior to entering into a water quality agreement with a second party, such as a lawn maintenance company, government agency, or homeowner association. The morning session provided information on the turfgrass industry in Virginia and environmental considerations in managing turf. Participants were also given ample opportunity to visit displays and sponsors. The afternoon session discussed water quality agreements and allowed participants to apply for a water quality agreement with the Virginia Department of Conservation and Recreation.

b. Rappahannock Watershed

The Rappahannock River Basin Commission and the Rappahannock Conservation Council co-sponsored the Fourth Annual Rappahannock River Basin Summit. This summit focused on changes to federal conservation related policies. Representatives of EPA, Chesapeake Bay Program, and USDA provided an overview of many of these changes and their potential impacts at the state and local levels.

Three Rappahannock Tributary Strategy Implementation Workgroups (Agriculture and Forestry, Urban, and Public Education and Outreach) were formed to provide a forum for stakeholders to influence and participate in implementing the Tributary Strategy. All three workgroups were well attended by stakeholders throughout the watershed, including private citizens and representatives of federal and state agencies, local governments, SWCDs, and Virginia Cooperative Extension. Participants in the forum are also identifying and implementing quantifiable projects. Some of these projects include the development of a Rappahannock environmental and resource directory; an agricultural training course for real estate agents; a training workshop and roundtable for local government program administrators; and a series of environmental education workshops for homeowners.

The Rappahannock Mini Grant provided $40,000 to nine organizations throughout the Rappahannock Watershed. Through this funding, several outstanding projects were achieved. Perhaps the most significant accomplishment was the Stewards of the Upper Rapidan. With seed money from this grant, the Stewards of the Upper Rapidan was formed to organize and coordinate landowners in the Upper Rapidan watershed in response to chronic flooding and erosion problems. This organization initiated two streambank restoration projects and has held a number of conservation related workshops for the local landowners. The second year of this Mini Grant is underway with funding allocated to nine organizations, most of which have not received any grant funding in the past. This year's grant is highly diverse with funding going towards a public outreach pilot project, bay grass planting project, and the development of regional watershed management plans.

c. York Watershed

Watershed Conservation Roundtable – The York Watershed Forum, a roundtable of stakeholders, continued to meet regularly during 2001, to discuss nutrient and sediment reduction efforts in the York and Lower Coastal basins. In order to address more issues of concern in these basins simultaneously, the forum reorganized into workgroups in the autumn of 2001. These workgroups will address revision of the York Tributary strategy, public input on environmental endpoints and water quality standards, impaired

waters, increasing participation in the forum, water quantity issues, and land conservation. Each workgroup has a chairperson, state agency resource person, and recorder. They will meet at least quarterly and work products are due from each workgroup in 2002.

Through DCR contracts with private nutrient management planners, partially funded by EPA and a Water Quality Improvement Fund grant, agricultural nutrient management plans were written for nearly 35,000 new (first-time) acres in the York and Lower Coastal basins. Four new animal waste structures were installed in the York Basin using state-provided cost-share funds.

A seminar was held in April 2001 for localities in the Middle and Lower York, promoting Low Impact Development stormwater management techniques. Also, four urban erosion and sediment control and stormwater management programs were reviewed and recommendations were made to local governments to help these programs achieve consistency.

In 2001, an index of public and private grant programs related to water quality was revised and distributed to members of the York Watershed Forum. Grant projects were initiated in the York and Lower Coastal basins during 2001 to achieve progress in several areas. These included: mapping septic systems needing repair in the Three Rivers Soil and Water Conservation District, providing additional repairs of failed systems in the Middle Peninsula, restocking shad in both the Pamunkey and Mattaponi Rivers, and promoting alternative landscaping of residential and commercial land uses.

d. James Watershed

Watershed Conservation Roundtables (WCRs) in the James River basin were very active in 2001, with ten WCR-related public meetings conducted throughout the year. The Upper James River roundtable held strategic planning meetings in each of the four SWCDs as of May 2001. These meetings provided opportunities for stakeholders to participate in identifying perceived critical watershed issues and categorizing those issues into four areas: environmental education/citizen stewardship and water quality monitoring, agricultural and forestry best management practices, urban best management practices, and land use planning. The next phase of the Upper James is to develop strategic action plans for these four categories, develop timetables for implementing strategies and to begin investing resources in specific areas, and to develop a list of funding avenues and sources for future projects. These challenges and more will be met at the fifth Upper James roundtable meeting in December 2001.

The Piedmont James Watershed Conservation Roundtable met for the second time in June to continue discussions on nonpoint source pollution affecting the Piedmont region of the James River. This meeting included updates on the Chesapeake Bay Program's environmental endpoint and water quality criteria development process.

Three mini-roundtable meetings for key nutrients (phosphorus, nitrogen) and sediment were scheduled as follow-up to the June meeting. These meetings provided a forum to create potential and more specific solutions to pollutant loading problems. Each meeting was sponsored by a different SWCD in the Piedmont James watershed. Thomas Jefferson SWCD hosted the Sediment Workshop in September at the Virginia Department of Forestry Headquarters in Charlottesville; the Robert E. Lee SWCD hosted the Phosphorus Workgroup in October in Appomattox; and the Monacan SWCD hosted the Nitrogen Workshop in December in Powhatan.

The Hampton Roads Planning District Commission (HRPDC), in cooperation with DCR and the

Lower James River SWCDs, conducted the first Lower James River Watershed Conservation Roundtable Workshop in February 2001. The workshop targeted local government elected officials and staff, representatives of regional government agencies, civic organizations and other groups including business, agriculture, forestry, military, development and environmental organizations. The workshop was designed to give participants an overview of the Chesapeake Bay Program, James River Tributary Strategy and the Roundtable concept. The second Lower James Roundtable, held in June 2001, focused on the purpose, structure and membership of the Roundtable, program linkages and summaries of the Focus Group discussions from the first meeting held in February, 2001. Members at the third meeting, held in October 2001, finalized the mission statement, discussed program linkages in more detail and presented status reports on Chesapeake Bay Agreement 2000 activities.

Additional Cooperative Watershed Initiative activities completed during 2001 are listed below.

(1) Chesapeake 2000 - On November 16, 2001, the James Watershed Office hosted one of four C2K Forums in the Chesapeake Bay watershed. These Forums were targeted to Soil & Water Conservation Districts, the Natural Resources Conservation Service, and Virginia Cooperative Extension. Discussion topics included:

- a brief overview of Chesapeake Bay Program activities and current status of the Bay
- an overview of the major sections of the Chesapeake Bay Agreement, and
- local government activities aimed at meeting Chesapeake 2000 (C2K) commitments
- challenges (current and future) to meeting the C2K commitments.

(2) TMDLs - TMDL development moved to the Piedmont region of the James River with public meetings for the 6.37 mile segment of Moores Creek TMDL in Albemarle County and the City of Charlottesville and the 14.3 mile segment of Willis River in Cumberland County. Researchers at the University of Virginia will perform the modeling and TMDL development for Moore's Creek. MapTech will perform similar activities for the Willis River.

(3) Regional Activities - In June 2001, the James River Advisory Council coordinated the second annual James River Regional Clean-up. This event is a regional effort aimed at involving communities throughout the watershed with clean-up projects and James River awareness. The event focused on more than 40 miles of the James River from Cartersville to Presquile National Wildlife Refuge. The James River Cleanup Partnership includes localities, river-related organizations, business, industrial partners, and state government. DCR's Adopt-A-Stream program was a co-sponsor of the event and provided supplies for the clean-up activities. Over 550 volunteers participated in this year's event.

(4) Nutrient Management - DCR Nutrient Management Specialists worked on many poultry operation plans in response to HB1207 requirements and assisted with development of plans prepared by private nutrient management planners.

(5) Urban Program - Urban program staff remain very active in plan review, inspections, and training, and assisted in local program reviews that were conducted throughout 2001.

2. Southern Rivers Watersheds

a. Big Sandy and Upper Tennessee River Watersheds

There was a great deal of watershed activity within the Big Sandy River and the Upper Tennessee River Basins in 2001. The following are highlights of some of those activities:

(1) Big Sandy River Basin

- The Big Sandy River Basin Coalition (BSRBC) held its Fourth Annual Big Sandy Conference in Prestonsburg, Kentucky. Bobby Hall, (Virginia) who serves as the BSRBC Chair, appointed standing committees for the BSRBC. Bylaws have been approved, with the exception of some minor details that will be handled in future meetings. The BSRBC Board has decided to pursue 501(c)(3) status to enhance their eligibility to apply and receive certain grants.

- A Big Sandy Clean Up Day was scheduled for the portion of the Tug River where Kentucky, West Virginia, and Virginia intersect. The event was symbolic because participants from all three states pitched in to clean up the area. The event also provided a positive means to promote the Big Sandy, especially in light of last year's coal slurry spill that forced the Big Sandy into receiving the distinction of being the 7th most endangered river in the nation.

- The next annual meeting of the BSRBC is scheduled for Breaks Interstate Park in Virginia on April 5-6, 2002. The Black Diamond Resource Conservation & Development Council, the Lonesome Pine Soil & Water Conservation District (SWCD), the Big Sandy SWCD, and DCR's Upper Tennessee & Big Sandy Watersheds Office will be working together to plan and organize the conference.

- Efforts are underway in the Big Sandy Basin to compile all water quality monitoring data from the past two years in Kentucky, West Virginia, and Virginia. Once the data is gathered, officials in Kentucky hope to compile the data in a similar format. This will enable the BSRBC to determine where the "holes" are in their monitoring network. It will also provide the necessary documentation for submitting grants to improve water quality.

- As of August 2001, the Big Sandy Soil & Water Conservation District (BSSWCD) was officially established. This accomplishment should enhance all other efforts that are currently planned for the BSRBC since Bobby Hall, the chair of the BSSWCD, is also the chair of the BSRBC. As a sincere gesture of support for the BSSWCD, the Buchanan County Board of Supervisors (BCBOS) donated a school building to the BSSWCD. The school is complete with gymnasium, classrooms, and office space. Since that time, building improvements have been underway. Other portions of the building will be converted to classroom and laboratories to assist in their environmental education efforts. In addition to this generous boost to the fledgling District, the BCBOS allocated $25,000 towards start-up costs in BSSWCD's new endeavors.

- Erosion & Sediment Control Program reviews for Dickenson and Buchanan Counties were completed during the last quarter of 2001. The reviews were conducted by Clarence Huff and Phyllis Hinch, both of DCR. Although both county programs were found to be "Inconsistent", this is the first time DCR has been in the position to effectively begin a

dialogue with the counties, which could lead to "Consistent" programs in these counties over the next year or so.

(2) Upper Tennessee River Basin

- With funding from the Water Quality Improvement Fund, the Lick Creek Watershed Committee has been able to leverage other funds from TVA, Canaan Valley Institute, and the U.S. Fish & Wildlife Service to improve water quality in Lick Creek. They recently eliminated the single largest illegal dump in southwest Virginia (over 2 acres in size). After the clean up, a chain-link fence was built to prevent continued dumping. The Lick Creek Committee also committed to eliminating 26 "straight pipes" from Lick Creek, and appear to be, not only on track, but exceeding that goal.

- On Friday, July 20, 2001, approximately ten members of the Upper Tennessee River Roundtable (UTRR) met with U.S. Forest Service officials from Atlanta, Georgia and regional representatives of the U.S. Forest to discuss the Upper Tennessee River Watershed Restoration Initiative. Two presentations were provided by UTRR Executive Board members that depicted the plight of mussels in the Clinch River. Representatives from Tennessee and North Carolina were also present since the grant proposal includes three states. Most of the funds will be allocated to Virginia if the proposal is funded. Potential projects in the proposal include a toxicity survey, a "model watershed" project, and personnel for the UTRR to help implement the Strategic Plan.

- The Upper Tennessee River Roundtable (UTRR) held its 5th Roundtable Meeting on April 26, 2001 at Mountain Empire Community College. This was their second annual awards banquet in which various citizens were recognized for outstanding water quality efforts. Approximately 70 people were in attendance. Positive media coverage was reported by WCYB-TV Channel 5 of Bristol, Virginia and the *Coalfield Progress* newspaper.

- Members of the UTRR met on September 22, 2001 at the Mountain Empire Community College for their sixth meeting (since June of 1999). This meeting was combined with the first annual "Protecting Our Rivers Conference" and featured a host of speakers that focused on water quality issues such as logging, agriculture, sewage disposal, and urban erosion control.

- In October of 2001, the UTRR received notice from the IRS that they have been granted a provisional 501(c)(3) status. Funds were donated by the Tennessee Valley Authority (TVA) to pay the required filing fee.

(3) Presentations Provided Regarding Roundtables in 2001

- SWCD Director Orientation – St. Paul, VA on February 28 (22 people)
- VASWCD Area IV Meeting – Scott County on March 27 (60 people)
- The National Watershed Conference - Richmond, VA on May 21 (70 people).
- The Society of American Foresters - Norton, VA on June 14 (60 people).
- The Trout Unlimited meeting - Johnson City, TN on June 14 (15 people).
- New River Roundtable "Kick Off" - Dublin, VA on August 14 (110 people).

- The Roanoke River Roundtable – Roanoke, VA on August 24 (60 people)
- Appalachian Sustainable Development – Abingdon, VA on October 6 (10 people)
- The Nature Conservancy – Abingdon, VA on October 30 (8 people)
- Roanoke's Clean Valley Council – Roanoke, VA on November 1 (110 people)

In addition to these watershed activities there has been considerable progress in developing TMDLs in the UpperTennessee River Basin. The following are some of the key activities that have taken place in 2001:

- The Three Creeks Fecal Coliform TMDL Implementation Plan (Washington County, Virginia) has been completed. Implementation is currently underway. Approximately $700,000 has been allocated to address the restoration needs in the Three Creeks area (tributaries to the Middle Fork Holston River)

- A "kick off" meeting for the Little Creek TMDL (Washington County, VA) was held on October 12, 2001. The purpose of the meeting was to begin identifying the time frames for developing a TMDL Implementation Plan. The Plan must be completed by the first quarter in 2002. A public meeting was scheduled for December 6, 2001.

- The Guest River is scheduled to begin the process of developing an Implementation Plan in 2002. The Department of Mines, Minerals, and Energy will be the coordinating agency since most impacts to the Guest are from mining.

- On Wednesday, August 8, 2001, the Upper Tennessee & Big Sandy Watersheds Office received an e-mail note originating from Mr. Weitman of EPA. In his note, the following message was conveyed to other EPA offices across the country, "Attached is an NPS TMDL implementation plan that is absolutely first rate. It is entirely consistent with our draft FY 2002 NPS guidance that discusses eight elements of a good watershed-based plan to effectively implement TMDLs, and it is, in general, just the sort of analytical work we are looking for to provide the detail needed to bridge a TMDL with the implementation of the TMDL."

b. New River Watershed

The New River Watershed Roundtable was successfully started this year. The Roundtable is a basin-wide initiative with strong grassroots support in three states (VA, NC and WV), with the goal of developing the New River Watershed Strategic Plan to address nonpoint source pollution. The Virginia contingency of the Roundtable is composed of 150 citizens living and working in the New River watershed. It is supported by the New River Community Partners of the American Heritage Rivers Initiative; and the New River-Highlands Resource Conservation and Development Council with representatives of local government officials, Boards of Supervisors, SWCDs, and state and federal agencies.

Under the umbrella of the Roundtable, work groups have been formed and have already started working on conservation initiatives that will be incorporated into the strategic plan. The strategic plan will address NPS Program priorities in the New River Watershed focusing on conserving clean tributaries and improving impaired ones, promoting sustainable uses of the river, and promoting agricultural and urban best management practices.

The Western Virginia Land Trust and the newly formed New River Land Trust are representatives on the Land Use Work Group. The land trusts have been funded to adopt conservation easements and streambank restoration to conserve the New River as well as other rivers in southwest Virginia. The Big Survey, the largest conservation easement in Virginia, successfully conserves 10,144 acres of pristine forest and the watershed for the drinking water for the Town of Wytheville.

The Urban Workgroup will address urban nonpoint source pollution. One initiative is the Southwest Virginia Stormwater Management Project. The New River-Highlands RC&D has been funded to develop and promote four model stormwater ordinances: Coalfield Counties, Upper Tennessee Counties, New River Counties, and Faster Developing areas. The Town of Bluefield adopted a strong Erosion and Sediment Control Ordinance and is presently constructing a stormwater component, the first in the New River watershed.

The New River PDC and DCR are continuing development of the New River Blueway, a canoe trail running the entire stretch of the New River in Virginia, and connecting with the trail in North Carolina. The Recreation and Tourism Workgroup secured funding and support for conservation easements on four stretches for canoe take-out points.

The Friends of Claytor Lake, in cooperation with the consulting firm MapTech, the New River-Highlands RC&D, DCR and DEQ, is applying for funding to access and address nonpoint source pollution in Claytor Lake and from Peak Creek, an impaired tributary on the 2006 TMDL list. This effort is to prevent Claytor Lake itself from being listed, and address the TMDLs proactively. To support this effort, the Friends of Claytor Lake sponsor an active Citizen's Water Quality Monitoring effort and lake clean-ups throughout the year.

Virginia Tech representatives on the Environmental Education Workgroup are applying for funds to develop a curriculum for a "New River Watershed Experience" as part of the watershed education initiative of the Chesapeake Bay 2000 Agreement and Virginia Naturally.

c. Roanoke River Watershed

During the year, the Upper Roanoke River Roundtable was formed. In August, the Roundtable hosted the third annual Roanoke River Watershed Conference at Explore Park near Roanoke.

Noteworthy activities in the basin included the completion of a TMDL implementation plan for four segments of the Blackwater River in Franklin, County. Public participation was an integral part of the process where two major public, as well as, multiple focus group meetings were held to receive public comment. The actual on the ground implementation commenced during the month of September and 319 grant funds will be used to implement both agricultural and residential NPS reduction programs.

Other activities in the basin included a House Joint Resolution study to look at the desirability and feasibility of establishing a Roanoke River Basin Commission. The findings, to date, support the creation of a commission.

d. Albemarle, Chowan and Coastal Watersheds

Lower James River - DCR, four SWCDs, localities, and the Hampton Roads Planning District Commission (HRDC) continue working together in the Lower James River watershed. Under contract,

HRPDC established and is facilitating the Lower James Watershed Roundtable (LJWR). On February 26, 2001, DCR, in cooperation with the Hampton Roads Planning District Commission (HRPDC) and the Lower James River SWCDs held the Lower James River Watershed Conservation Roundtable Workshop. The workshop was directed towards local government elected officials and staff, representatives of regional governmental agencies, civic organizations and other groups, such as business, agriculture, forestry, military, development and environmental organizations that have an interests in the regions rivers and estuaries. Approximately approximately 50 local interest groups and individuals attended the second meeting of the LJWR on June 19, 2001. The meeting focused on the purpose, structure and membership of the Roundtable. HRPDC presented a paper documenting the linkages between various elements of the Chesapeake Bay Program, stormwater management, TMDLs and other state and federal agencies.

On October 25, 2001, the third Lower James River (Hampton Roads) Watershed Conservation Roundtable meeting was held. During the meeting the participants reached a consensus on the mission statement, program linkage, and provided a status report on the Chesapeake Bay Agreement 2000. The more than 40 participants included representatives of regional governmental agencies, civic organizations and other groups, such as business, agriculture, forestry, military, development and environmental organizations that have an interest in the region's rivers and estuaries. This effort is well underway and serving as a locally driven forum for information exchange, discussion and local coordination of water quality issues.

(1) Lynnhaven River Study – The City of Virginia Beach, with the assistance of DCR, has secured a Small Watershed Grant from the USFWS to create a locally supported Watershed Management Plan for the Lynnhaven River Watershed. This plan will document everything that has been learned and agreed upon about the watershed prior to actually implementing management measures. Topics which will be addressed in the Lynnhaven Watershed Management Plan include a watershed inventory, water quality problems and their sources; goals; agreed upon actions; a funding plan; and commitments from particular agencies and other stakeholders to accomplish the plan. Additionally, the city is supportive of the applicable Chesapeake Bay 2000 watershed commitments, the Lower James River and Small Coastal Basins Watershed Conservation Roundtable objectives. The Lynnhaven Watershed Plan is intended to help foster other locally driven watershed protection and restoration efforts within the Lynnhaven watershed on a more systematic and strategic manner.

As a related matter, the Virginia General Assembly passed a study resolution in the 2001 legislative session, which directs the commonwealth's natural resource agencies to begin work with the City of Virginia Beach and the U.S Army Corp of Engineers on a Lynnhaven watershed study to be included in the federal budget for the fiscal year 2002. This study will be modeled after a similar study, which is underway in the Elizabeth River, focused on development of a habitat restoration plan for the watershed. The restoration study will form part of the larger and more comprehensive Lynnhaven Watershed Management Plan. In October 2001, the City was notified that this funding would be available to support the watershed study efforts in the Lynnhaven.

(2) Albemarle-Pamlico National Estuary Program - DCR is actively working with the Albemarle-Pamlico National Estuary Program (APNEP) to coordinate nonpoint source pollution management efforts within the shared watersheds. DCR is the liaison between the APNEP staff, the Pasquotank Regional Council and the Chowan Regional Council in North Carolina, and Virginia Watershed Conservation Roundtables.

In support of this collaborative effort, on October 26, 2001, Virginia and North Carolina signed a Memorandum of Agreement regarding cooperative efforts in the APNEP. This Memorandum of Agreement (MOA) provides enhanced coordination and cooperation between the North Carolina

Department of Environment and Natural Resources (NCDENR) and the Virginia Department of Conservation and Recreation (VADCR), as partners in the Albemarle-Pamlico National Estuary Program (APNEP). APNEP, through its Coordinating Council, is a consortium of organizations, including federal, state, local governments, non-profit institutions, private industry, academia, and private citizens, dedicated to the restoration and protection of the Albemarle-Pamlico estuarine ecosystem. This MOA is established to encourage coordination and cooperation between the NCDENR and VADCR and to heighten awareness of each agency's programs regarding the goals and objectives of the APNEP's Comprehensive Conservation and Management Plan (CCMP). The overall objective of improving environmental and economic resources in the Albemarle-Pamlico Sounds watershed.

(3) Southern Watershed Area Management Program - Within the Albemarle watershed, the Cities of Virginia Beach and Chesapeake in conjunction with DCR, DEQ, NOAA, Hampton Roads Planning District Commission (HRPDC), and other local, state, and federal agencies are cooperatively coordinating efforts through the Southern Watershed Area Management Program (SWAMP). The SWAMP is intended to improve coordination of management efforts in the Southern Watershed Area (SWA) and to develop new and enhanced management tools. A Multiple Benefits Conservation Plan (MBCP) has been written and is under final review for the watershed. The MBCP is a means of developing a strategy for conservation measures in the SWA. Specifically, the MBCP addresses measures to achieve multiple benefits from wetlands compensation decisions by identifying "focus" areas with regional important habitat, water quality, flood and erosion control and recreational benefits and establishing an improved process of coordination between local, state, and federal agencies involved in wetland compensation and conservation decisions (MBCP, 2001). In order to help support these efforts, an Information Exchange MOA has been drafted and is also currently under review by the Multiple Benefits Conservation Plan Technical Advisory Committee.

In Addition, the Cities of Virginia Beach and Chesapeake have signed an MOA with HRPDC, DCR, DEQ, DGIF, USACE, USCG and USFWS to improve the water use conflict education for the North Landing River. This MOA is intended to promote safe boating and increase in public awareness of existing and potential waterway use conflicts, and to protect rare and unique ecosystems of the SWA from damage by on-water uses by raising public awareness of the importance of these native ecosystems to the health of the river. A similar MOA is in the process of being written for Back Bay. The Back Bay MOA is expected to be signed early 2002.

(4) Chowan River Watershed Roundtable - Groundwork began on efforts to bring a locally driven watershed advisory group to the Chowan Watershed. J.R. Horsley District Soil and Water Conservation District demonstrated an interest in taking the lead in the development of a Watershed based conservation group based on their central location within the watershed and the strong conservation framework already in place. Therefore, representatives from DCR met with the J.R. Horsley SWCD on March 29, 2001 and again on April 6, 2001. Through the course of the meetings it was determined that J.R. Horsley SWCD would take the lead with DCR providing technical and planning support and guidance for the process.

As part of the effort, J. R. Horsley hosted a meeting on September 6, 2001 to discuss the formation of the Chowan River Watershed Roundtable. Representatives from DCR, NRCS, five SWCDs and two PDCs were in attendance. Representatives from DCR presented Virginia's approach to watershed management and facilitated the discussion. The discussion focused on what the attendees felt were the biggest issues and concerns in the Chowan Watershed and what would be the goals and objectives of a Watershed Roundtable in order to address those issues and concerns; a structure for the Roundtable; and additional stakeholders that should be invited to participate.

The group believes that a roundtable is an appropriate mechanism to help solve water quality and quantity problems through education and resource coordination. The roundtable will establish uniform baseline water quality information/ data /monitoring plan, a means to identify existing data sources, and to serve as a coordinating watershed group.

This core group will serve as the steering committee for the formation of the Chowan River Watershed Roundtable, made up of local government, citizens, conservation groups, and other identifiable stakeholders.

(5) Eastern Shore (Bay and Atlantic Coastal) -Over the past six years, the Virginia General Assembly has allocated, and the Department of Conservation and Recreation (DCR) has administered, grant funding to support the District activities related to the Tributary Strategy. At this time the Tributary Strategy does not include long-term nutrient and sediment reduction goals that would achieve its living resource goal. The thrust of the Tributary Strategy is in gathering local water quality information through enhanced water quality monitoring and small watershed modeling to determine the existing water quality issues and concerns on which to base long-term nutrient and sediment reduction goals. The Tributary Strategy Implementation Team (Team) agreed to work toward the 2003 target reductions, which will be vital in determining future long-term nutrient and sediment reduction goals.

In an effort to implement this strategy, the Team, during FY2001, provided the structure for implementation of Tributary Strategy goals and established a forum of citizens and agencies to coordinate water quality efforts, share information, strengthen working relationships and provide educational opportunities increasing public awareness and involvement through citizen volunteer programs. As part of that effort, a training session was held on March 21, 2001, to train Citizen Volunteer Epiphyte Monitors. Thirty people were in attendance. The Team, in cooperation with the Alliance for the Chesapeake Bay, developed and provided each citizen volunteer with an Epiphyte Monitoring Manual.

In addition to public awareness, the Team developed and implemented an Enhanced Water Quality Monitoring Plan. The Enhanced Water Quality Monitoring Plan Contract was completed with VIMS. Baseline monitoring for this project began in January 2001. The plan focuses on local water quality information by determining the existing water quality issues and concerns on which to base long - term nutrient and sediment reduction goals. The Enhanced Water Quality Monitoring Plan set a goal of at least three monitoring stations on five different creeks. The creeks were selected using a matrix comparing historic SAV change, availability of past water quality monitoring date, watershed land use, development pressures, presence of aquaculture and location of point sources (NPDES permit). Based on the combination of these factors five creeks were selected: Chesconessex creek, Onancock creek, Occahancock creek, Hungars creek and Plantation creek. Cherry creek was added to the list due to increased development pressures and to ease the timing constraints of logistically sampling each creek in one day within a tidal phase. The project included four monitoring components: fixed creek stations, pulsed input, groundwater and epiphyte. This effort and small watershed modeling efforts will be used to develop long-term reduction goals.

C. Cooperative Programs Administered by Partner Agencies

1. Department of Environmental Quality (DEQ)

a. Total Maximum Daily Load (TMDL)

The Department of Environmental Quality is the lead agency in the TMDL process, administering the public participation, technical review, and formal submittals to EPA and Virginia State Water Control Board for approval. DCR and DMME have signed Memoranda of Understanding with DEQ agreeing to a cooperative effort in the TMDL and implementation plan development process. The Virginia Department of Health has agreed to participate in this cooperative effort for impaired shellfish waters.

Based on the 1998 Impaired Waters List, Virginia needs to develop 648 TMDLs on 600 impaired waters. This includes:

- 295 TMDLs for waters identified in the DEQ's 1998 303(d) list,
- 260 shellfish waters identified in DEQ's 1998 303(d) List,
- 18 waters from EPA's additions to Virginia's 303(d) List, and
- 75 impaired waters expected to be added to the 2002 303(d) List.

This number of impaired waters will likely fluctuate in the future based on changes in water quality standards, EPA listing guidance, de-listings, and changes in water quality conditions.

To date, 22 TMDLs have been approved by EPA, 2 TMDLs have been submitted to EPA awaiting approval, and 3 segments have been de-listed. Contracts are negotiated for 33 freshwater segments and 29 shellfish segments to meet the 2002 Consent Decree schedule and "early starts" toward future schedule commitments.

A report was prepared in November, 2000, for the Governor and General Assembly in response to Item 415.F.1 of the 2000 Appropriations Act that directed DEQ to develop a comprehensive plan for implementation of the Total Maximum Daily Load (TMDL) program through 2010. Included were projected costs for developing 353 TMDLs and implementation plans. The costs for developing TMDLs for the 260 shellfish waters are not included because neither EPA nor DEQ have yet developed the appropriate methodology for this type of TMDL. Since that report was submitted shellfish methodology has been developed and the costs for the 2003-2004 biennium budget are projected to be $529,000. Based on state agency experience with developing TMDLs, the projected cost of developing the 353 TMDLs is estimated at $59.1 million over this ten-year period. This estimate includes additional positions to meet the increasing workload of the TMDL program. Total State and Federal funds available to the three state agencies for this same period leave a deficit of $40.8 million if no additional funds are provided to the TMDL program.

DEQ, DCR, and DMME are investigating alternate funding sources, a rulemaking proposing the development of a TMDL planning regulation, and a re-examination of Virginia's Water Quality Standards.

EPA has approved a simple approach for shellfish TMDLs and DEQ intends to expand the utilization of this methodology statewide. Since the simple method is faster and less costly, the original cost projections for TMDL development should decrease as the "simple method" is applied throughout the TMDL program. Several other alternate cost-effective and timely methods are being investigated.

b. Virginia Ground Water Festival

The Department of Environmental Quality, with many partners, hosted a Ground Water Festival on Friday, September 21, 2001. The event was held in the Coastal Plain Physiographic Province at Camp Kittamaqund in Burgess VA. A total of 130 sixth grade students attended from Northumberland Middle

School. The students rotated through six interactive educational sessions to receive instruction on ground water occurrence and ground water protection. The children were enthusiastic as they learned about the formation of springs, the hydrologic cycle, watershed concepts including quantity and quality issues, onsite sewage disposal, choosing alternative cleaning products to reduce impacts to the environment, and geographic information systems. The students even hiked through the woods to visit a spring on the property! Our partners for the event were US EPA Region III, National Project WET, The Perrier Group, VA Dept Conservation and Recreation, VA Dept of Environmental Quality-Tidewater Regional Office, VA Institute of Marine Science, VA Dept of Mines, Minerals, & Energy, US Geological Survey, Northern Neck Soil and Water Conservation District, Northumberland County Health Department, Northumberland County High School, SAIF Water Committee/Interfaith Service Council, VA Rural Water Association, and the VA Ground Water Protection Steering Committee.

Another Festival is planned for Fall 2002. For more information contact Mary Ann Massie, VA DEQ Office of Water Resources Management, 804-698-4042.

2. Virginia Cooperative Extension (VCE)

NPS Pollution Control Education Program

Virginia Cooperative Extension in partnership with the Virginia Tech Institute for Innovative Governance, the Virginia Department of Conservation and Recreation, and the Virginia Chesapeake Bay Local Assistance Department, conducted a series of "Water-Sensitive Site Design & Development" workshops. Workshops were held in Manassas, Fredericksburg, Chesapeake and Frederick County. In addition, a workshop was conducted for the Virginia Institute for Planning Commissioners.

The focus of the workshops was to help local governments, designers, engineers, developers and landowners more effectively protect sensitive land and water resources by building awareness of specific "water sensitive" and "low impact development" tools and techniques. The workshops demonstrated methods to apply these tools and techniques in the planning and development process.
The workshops had three primary goals: 1) to show how specific site design and engineering tools and techniques can have a positive impact on improving and safeguarding water quality in greenfield areas and in existing urban/suburban developments; 2) to discuss how specific planning, design and development techniques can be implemented; and 3) to enable participants to learn about specific hydrologic analyses, engineering procedures, and site design applications for conserving and restoring hydrologic functions of sites and large landscapes.

Virginia Cooperative Extension (VCE) in cooperation with the Department of Conservation and Recreation (DCR), the Natural Resource Conservation Service (NRCS) and local Soil & Water Conservation Districts (SWCD's) coordinated over sixty outreach educational events for farmers, landowners, land managers and homeowners throughout Virginia. These field days, demonstrations, conservation tours and workshops reached approximately 8,000 or more individuals who are responsible for making land use decisions on approximately 500,000 acres of farmland, forest land and turf in the commonwealth. Some of the BMPs demonstrated and implemented at these events included: integrated pest management (IPM), cover crops, buffer strips, manure management, erosion control, nutrient management, grazing land protection, stream protection and more. State and federal conservation programs promoted through this outreach effort included the Conservation Reserve Enhancement Program (CREP), Chesapeake Bay Protection, the Wetland Reserve Program, Nutrient Management Farm Planning, EQIP, the Virginia BMP Cost-Share Program and more. Evaluations were completed for most of these

events. Some of the comments on the success and impacts of this outreach educational effort are as follows:

> " The Conservation Tour was a success because it brought the appropriate people together to begin and continue a dialogue that will lead to more cooperation between local government, the SWCD and landowners to work to implement solutions (to water quality problems)."
> - *Headwaters SWCD Conservation Tour*

> " A general attitude change was perceived by non-farmer attendees about water quality, buffer infiltration, and awareness of BMP programs.This event was a great success. All attendees learned new information and became more aware of water quality."
> - *Blue Ridge SWCD Conservation & Education Tour*

> " This event was very successful. Participants developed a greater understanding of how lawns in the landscape contribute to NPS pollution and steps to prevent NPS pollution."
> - *Prince William Extension Spring Fling*

3. Virginia State University (VSU)

Virginia State University is one of the two Land Grant universities of the Commonwealth of Virginia. Its mission is to promote and sustain academic programs that integrate instruction, research, and extension/public service in a design most responsive to the needs and endeavors of individuals and groups within its scope of influence. The university provides bachelors degrees in many areas and masters degrees in selected areas. Its overall goals are: to foster intellectual and personal development of students; to provide well-rounded liberal art education; to develop in students the mastery of fundamental knowledge in various academic areas of their choice; and to prepare students for furthering their studies at the graduate level by providing them knowledge, skills, and abilities.

VSU has a strong agricultural research program in the areas of nutrient management, pesticides, horticulture, crops and aquaculture. Except for the aquaculture research, which is operated by the University's Cooperative Extension scientists, the rest of the program is under the Agricultural Research Services (ARS). The ARS is an independent department within the School of Agriculture, Science and Technology. It functions under a separate director and operates closely with the Cooperative Extension to distribute research results to stakeholders throughout the commonwealth. Research in the environmental field includes land application of confined animal manure, with special emphasis on nitrogen and phosphorus mobility; atrazine sorption and fate in agricultural soils and tidal river sediments; wetlands and riparian buffer establishment, and development of best management practices (BMPs) for nutrients, pesticides, and land application of confined animal manure.

Virginia State University looks forward to building a research, implementation, and outreach collaboration with the Virginia Department of Conservation and Recreation (DCR), especially in area of nutrient management through the NPS pollution (EPA's 319) program.

4. Department of Mines, Minerals and Energy (DMME)

The Department of Mines, Minerals and Energy's (DMME) Division of Mineral Mining (DMM) is responsible for regulating mineral mining and reclamation activities, and

reclaiming orphaned mineral mine sites in Virginia. The work accomplished by the Orphaned Lands Program in DMME/DMM encompasses three broad areas 1) inspection and survey of identified abandoned mineral mine sites, 2) design of reclamation plans for abandoned mine sites, and 3) administration of contracts, under Virginia procurement law, to construct the reclamation designs. Since 1981, 598 acres of orphaned mineral mine land has been reclaimed on 77 sites in Virginia by DMME/DMM. The total value of contracts bid for orphaned mineral mine reclamation is $2,773,160.34 through Year 2001. There are approximately 3000 abandoned mineral mine sites in Virginia and DMME/DMM has completed inventories on 297. The sites occur in all geographic provinces and some have histories that extend to pre-Revolutionary War times.

The Virginia Water Quality Improvement Fund and Secgion 319 funds from the Clean Water Act support the work of the Orphaned Land Program. In 2001, a 319 grant to DMM supported the nonpoint source pollution (NPS) Coordinator position and was responsible for completing inventory of Hydrologic Units C09, C10, C11, C12, C13, C14, C15, C16, D01, D02, D03, D04, D05, and D06 on Virginia's Eastern Shore. Furthermore, Virginia DMME/DMM has supported the NPS abatement efforts of DCR by providing financial support to complete inventory of abandoned mine sites in the following Hydrologic Units: G05, H19, H29, I01, I02, I05, I06, I28, I29, I30, I32, I37, and N16.

The NPS coordinator position also completed the public bidding process for reclamation of the Valzinco Mine in Hydrologic Unit F09 of the York River basin. This watershed is impaired from the development of acid mine drainage at various mines occurring along the banks of the watershed channel. Valzinco Mine occurs in the headwater area and contributes heavy metals to the water column from acidification of mine spoils in a geologic environment void of alkalinity and pH buffering. The construction is partially funded by another Section 319 NPS grant, through DCR, for $90,000 with the balance coming from Orphaned Land Funds. This enabled work to begin on the restoration of the Knights Branch subunit in Hydrologic Unit F09 (Northeast Creek in the North Anna River basin). The design creates approximately 4 acres of new wetlands in Virginia's Piedmont Province. This is particularly noteworthy as this watershed is directly connected to Chesapeake Bay through the York River system downstream of Lake Anna. Construction at Valzinco is approximately 45% complete on a total contract worth of approximately $250,000.

A second grant under the Virginia WQIF was secured by the partnership of DMME and Spotsylvania County; this grant enables DMME to begin reclamation of the Mitchell Mine – approximately one mile downstream of Valzinco Mine in Knights Branch. The NPS Coordinator has begun the reclamation design for Mitchell Mine and will also submit a final grant request to complete the restoration of Knights Branch watershed. For additional information, contact NPS coordinator at DMME/DMM, Robert G. Sobeck, Jr., phone number (434) 951 6318, or e-mail to rgs@mme.state.va.us.

The Division of Mined Land Reclamation in DMME has also secured Section 319 grants through DCR for reclamation work in the coal region of Virginia. Two projects were funded through 2001 1) Bull Creek Stream Improvement Project in Buchanan County for $57,000.00, and 2) Black Creek Watershed Restoration Project in Wise County for $150,000.00. For additional information on DMLR work contact Joey O'Quinn, phone number (540) 523-8271, or e-mail to gjo@mme.state.va.us.

5. Department of Forestry (DOF)

Virginia's Riparian Initiative continues to have great success through a combination of strong state and federal agency cooperation and programmatic efforts. The third annual governor's report lists the following accomplishments since its inception in 1996:

- The cumulative establishment of 448.9 buffer miles statewide with 312.2 miles within the Chesapeake Bay watershed. This means Virginia is more than halfway to our bay goal of 610 miles by the year 2010
- Ongoing implementation of the Riparian Buffer Tax Credit
- Ongoing implementation of the Conservation Reserve Enhancement Program (CREP). Over 9000 acres have been enrolled in Virginia.
- Partnership in a five year $1.3 million grant from the U.S. Forest Service for work in the Shenandoah-Potomac watershed
- Identification of buffer restoration opportunities on state-owned land, including 2 sites that already signed on Department of Corrections lands
- Continuing effort to conduct research on buffer survival and positive in-stream effects of buffer plantings

The Virginia Riparian Working Group, formed in 1999 through Executive Order #48, continues to identify and guide the Riparian Initiative. Emphasis for the coming year includes increased plantings on state-owned property, document riparian easement locations, monitor nursery stock to supply increased plantings, and begin thinking of the CREP renewal process. Furthermore, agency staff working through the Riparian Working Group and Nonpoint Source Advisory Council will work to increase riparian restoration efforts in currently low implementation areas.

The Virginia Department of Forestry's Potomac Watershed Project, in partner with Virginia Naturally and the Potomac Conservancy recently sponsored a Rain Garden Symposium. This symposium was held at Blandy Experimental Farm, the Virginia state arboretum, on August 21-22. It was a two-day workshop that was held in order to educate Chesapeake Bay state garden clubs about rain gardens.

A rain garden is a perfect tool for people interested in improving water quality to do just that. A rain garden is designed to pond storm water and allows the plants and soil to capture and keep pollution from entering waterways. The rain garden intercepts stormwater runoff that may carry pollutants from roofs, sidewalks, roads, parking lots and lawns. These pollutants are then alleviated through natural processes. Components of the rain garden that absorb pollution are the trees, shrubs, and perennials planted in the garden along with the soil and mulch layers.

The Virginia Department of Forestry views the rain garden as a man-made riparian forest buffer. This is true because the garden will provide the same benefits that a riparian forest buffer provides. These benefits include improved water quality, wildlife habitat, flood control, nutrient cycling, carbon storage and a recreation and aesthetic value.

Topics covered at the two-day workshop included discussing the link between riparian forest buffers and rain gardens, identifying and sizing a rain garden site, constructing a rain garden, and selecting plants for the garden. After the first day of classroom instruction the participants listened to case studies where rain gardens had previously been installed at Blue Ridge Community College in Weyers Cave, VA, and at the Page County Senior Center in Stanley, VA. Following these case studies, attendees helped to finish the installation of a rain garden near the front parking lot at Blandy Experimental Farm in Boyce, VA.

This workshop helped to create an important partnership between the Virginia Federation of Garden Clubs and the VDOF. Since this workshop, the Federation of Garden clubs has made this one of their major state and national projects.

The Rain Garden Symposium was a great success and very beneficial in helping to promote the rain garden concept. This workshop would not have been a success without the help of the aforementioned partners along with the Alliance for the Chesapeake Bay, the Reston Association, and the Virginia Department of Forestry's North Star team.

For additional information on rain gardens please contact Jack Kauffman at 540-332-7770.

6. Virginia Department of Agriculture and Consumer Services (VDACS) Virginia Agricultural Stewardship Act

In the fourth year of the Agricultural Stewardship Program, the Commissioner received more than 100 inquiries regarding possible agricultural pollution, of which 48 became official complaints. Areas subject to compliant this year include: 23 dairy complaints; 6 beef related complaints; 5 poultry complaints; 5 cropland complaints; 4 hog production complaints; 3 complaints related to horses; as well as 2 miscellaneous complaints.

The Agricultural Stewardship Act addresses water pollution problems caused by nutrients, sediments and toxins entering state waters from agricultural activities. Twenty-nine of the complaints involved both sediments and nutrients. Thirteen complaints attributed the pollution problems solely to nutrients, while six faulted only sediment. Thirty of these complaints concerned surface water issues, four concerned ground water, and fourteen involved both ground and surface water. Of the total complaints received, 60% involved both nutrients and sediments, 27% involved only nutrients, and 13% involved only sediment.

The Commissioner's Office, together with local districts in many cases, completed investigations in 48 complaints. As of March 31, 2001, four complaints still awaited a decision by the commissioner. Five complaints had been dismissed.

Investigations determined that 23 of the complaints revealed insufficient or no evidence of water pollution; therefore, these complaints were unfounded. In some of these cases, no clear connection could be made between the alleged pollution and the body of water in question. In other cases, the alleged problem had been corrected by the time the investigation was completed. In some instances, the farmers involved in unfounded complaints voluntarily incorporated best management practices into their operations to prevent more complaints or to prevent potential problems from developing into founded complaints.

In 17 of the investigations, there was sufficient evidence to support the allegations that the agricultural activities were causing or would cause water pollution. These cases were determined to be founded. Fifteen of the producers with founded complaints submitted plans, which were approved by the commissioner. On March 31, the plans regarding the other two complaints were in the development process. Of the complaints received through March of 2001, 47% were determined to be unfounded, 35% were determined to be founded, 10% were dismissed, and 8% were awaiting a decision by the commissioner. Farmers involved in the complaint and correction process were very cooperative in meeting the deadlines set by the Agricultural Stewardship Act and it was not necessary to assess any civil penalties.

7. Chesapeake Bay Local Assistance Department (CBLAD)

CBLAD was created in response to recognition by the Chesapeake Bay Commission that nonpoint source pollution related to the use and development of land was a growing problem in Virginia. The agency was given authority and direction to develop regulations applying to Tidewater Virginia communities that provide criteria for designating sensitive lands that affect water quality and additional criteria for use by the localities in granting, denying or modifying requests to use and develop land within those designated "Chesapeake Bay Preservation Areas" (CBPAs).

a. Revision of Regulations

The original regulations were adopted in September 1989. Tidewater localities had to determine what lands to include in their CBPAs, officially designate them, and adopt or modify one or more ordinances that would implement the performance criteria to protect water quality.

In April 1996, following 6-7 years of experience with local implementation of the original program regulations, CBLAD began a process to amend the regulations. The required public notices were published and public hearings were held. An advisory committee, composed of program stakeholders, was recruited and met numerous times from October 1996 through May 1997. Draft amendments were approved by the Chesapeake Bay Local Assistance Board in June 1997. These amendments are intended largely to clarify confusing aspects of the regulations, although there are several substantive changes pertaining to the agricultural program requirements and stormwater management requirements.

At that time, the regulations became mired in new review process requirements. They finally cycled through the various layers of review and received the governor's approval to go to public comment during the summer of 2000. The regulations were officially published in the *Virginia Register of Regulations* on October 9, 2000. Four public meetings were held in various regions of tidewater Virginia to receive verbal comments. In addition, hundreds of written comments were received. CBLAD staff entered comments into a database, evaluated the comments against the existing regulations and proposed changes, and developed recommendations for the board. Three board work sessions were conducted to discuss the comments. In addition, several meetings were held with key stakeholder groups to discuss their concerns and recommendations.

The board decided to make further revisions to the regulations, based on the public comments received. Since they considered some of the changes to be significant, they decided to invite public comment. A second public comment period was held during August 2001. Substantially fewer comments were received. CBLAD staff conducted a similar process to review and respond to each comment, providing further recommendations to the board. The board discussed these recommendations at an October work session with final adoption of regulation amendments targeted for December 2001.

b. Local Program Review

Currently, local program reviews include review of Phase I programs which are local land use ordinances that incorporate the performance criteria and locally designated Chesapeake Bay Preservation Areas including both Resource Protection Areas and Resource Management Areas, and Phase II programs which are local comprehensive plans which have addressed water quality protection and policy areas as outlined in the Regulations. The department and the board have completed their initial review of all 84 local Phase I programs, although local Phase I programs are occasionally revised and must be re-reviewed

for consistency. As of December 2001, the department and the board had completed either preliminary or final review of 82 local comprehensive plans. Of these 82 reviews, 58 local Phase II programs have been found consistent, 18 were found consistent with conditions and have a deadline for addressing the consistency items, and the remaining six underwent a preliminary review and have consistency items that must be addressed.

From January 1, 2001 to December 31, 2001, the department and board reviewed, approved, and established or extended deadlines for 36 local government program elements for compliance with the Act and Regulations. Consistency reviews for comprehensive plans (Phase II program) were completed for 21 local governments. Consistency reviews for Phase I program revisions (CBPA mapping and incorporation of performance criteria into local ordinances) were completed for 6 local governments. Compliance deadlines were either established or extended by the board for the remaining 9 local program elements.

c. Local Program Compliance Evaluation

Staff of the Environmental Planning Division have completed preparation of the local program compliance evaluation protocol, and the protocol is currently being evaluated by the department's Environmental Engineering Division. Once that division's comments have been incorporated into the protocol, a local government advisory group will be convened and asked to comment on the proposed procedures. It is anticipated that the new program element will be fully operational in the first quarter of 2002.

The protocol consists of three separate elements: an internal checklist to be completed by the localities, including information on levels of development activity (i.e., the number of building permits issued for various types of construction, the acres of wetlands effected by decisions of the local wetlands boards, etc.); an evaluation checklist to be completed by the locality liaison; and a set of field investigation sheets that will be used to record how well the local program is being implemented at various development sites. All of these components will be used to get a "snapshot" of the local program at a definable point in time. This will later be used as a reference point for future compliance reviews and for the annual and quadrennial reporting that is suggested in the new Chesapeake Bay Preservation Area Designation and Management Regulations.

d. CBLAD Grants Program

The Chesapeake Bay Local Assistance Department annually requests proposals for projects to implement the Chesapeake Bay Preservation Act and Regulations. Tidewater planning district commissions and local governments that implement the Bay Act are eligible to apply for funding. The competitive grants program annually levies over one million dollars worth of local government water quality protection programs.

For FY 2002, fourteen Tidewater counties, cities and towns received awards, totaling $493,431 in state funding. Local governments will provide match funding of $653,542. The grants range from an award of $19,099 to Gloucester County to help the county pay for an extensive environmental educational program, to a grant of $55,448 to the Town of Cape Charles to pay for implementation and enforcement of the Bay Act in that locality. Grant funds are distributed on a quarterly reimbursement schedule, following receipt and approval of progress and financial reports and deliverables. FY 2002 grant projects began on July 1, 2001, and first quarter reports and project deliverables were received the week of October 15, 2001.

The FY 2003 grant cycle began in mid-September 2001 with the release and mailing of the FY 2003 Request for Proposals. Funding priority this year will be placed on projects that improve the implementation and enforcement of the Bay Act in the Tidewater local governments. Project proposals will be received in early December 2001. During January and February, the proposals will be evaluated by Department staff, scored by a committee of local government representatives and staff of other state agencies, and assessed by the Chesapeake Bay Local Assistance Board's Grants Committee. Awards will be announced in mid-March after consideration by the full Board.

CBLAD also awards $125,000 in grant funds each year outside the competitive process for projects that advance the Chesapeake Bay Preservation Act program within a locality or localities, or that significantly advance the overall program. Under consideration at this time is a grant of $15,000 to Tidewater Soil and Water Conservation District for a project to implement start-up development activities associated with establishment of Phase III of Virginia's BayScapes Certificate Program. BayScapes teaches homeowners how to develop landscapes and gardens that protect water quality. This grant will be used for labor and camera-ready program products to develop the next tier of education and tracking materials to be known as the Commercial, Business and Corporate BayScapes Certificate Program. The primary distinction for the Phase III Program will be the added focus on reviewing and calculating cost/benefit justification and estimating conversion expenses for business and commercial operators who seek to implement BayScapes landscape management principles at privately managed sites and lands and for, and upon qualifying, institutional landscapes.

e. Agricultural Program

Regulations resulting from the Bay Act require, via local county ordinances, that the agricultural community meet two basic criteria. The first criterion requires that all agricultural land ". . .shall have a Soil and Water Quality Conservation Plan (Bay Plan) by January 1, 1995". The second involves the establishment and maintenance of a vegetative buffer area along streams and wetlands. The overall goal of this two-layered approach is to reduce the amount of nonpoint source pollution (NPS) that enters local waters and ultimately the Chesapeake Bay.

In FY 2002 CBLAD will distribute approximately $404,176.00 to Tidewater SWCDs to assist them and their localities with implementation of the agricultural criteria of the Chesapeake Bay Preservation Area Designation and Management Regulations. During the period from January 1, 2001 thru September 30, 2001, SWCDs have developed Soil & Water Quality Conservation Plans for 371 tracts covering 15,217 acres of agricultural land.

f. Site Plan Review

The staff at CBLAD reviews site plans and a variety of environmental studies prepared for federal, state and private sector projects. Federal projects that come to this agency for review are typically NEPA documents that are in the scoping, draft or final stages of coordination, evaluation and review. Many of the federal projects are submitted to this agency for a consistency determination under the Virginia Coastal Resources Management Program (VCRMP), which may or may not be concurrent with the environmental document review. State projects are reviewed by this agency either as an Environmental Impact Report through the Department of Environmental Quality's Office of Environmental Impact Review Process or directly by a sponsor agency submitting plans for a determination of compliance with the Chesapeake Bay Preservation Area Designation and Management Regulations as locally implemented. Site plans for

private-sector development projects are submitted by local governments to this agency for technical assistance review or as a CBLAD grant deliverable requirement demonstrating the locality's implementation of the Chesapeake Bay Preservation Act.

For the period between October 1, 2001 and September 30, 2001, 73 federal projects, 80 state projects and 54 private-sector projects were reviewed and commented upon. Staff routinely responds to technical inquiries from local government staff and from consulting firms. Several inquiries are typically fielded in any given week, which generally involve questions regarding water quality BMPs or interpretation of the technical aspects of the regulations and guidelines.

g. Education and Outreach

CBLAD maintains an active role in education and outreach to help promote understanding and implementation of the Chesapeake Bay Preservation Act. The Department has a part-time education and outreach coordinator position to oversee implementation of the education and outreach program. The coordinator develops educational materials and training modules, plans agency-sponsored events, coordinates the department's participation in related conferences and workshops, and will be organizing a Bay Act annual conference for our 84 local governments.

The department again participated in Annual Watershed Conference, held in September in Williamsburg. As one of the sponsors of this event, the department coordinated and participated in two additional sessions on topics such as sustainable development and Low Impact Development.

The department continues to work to promote improved understanding and implementation of other areas of the Bay Act and Regulations as the need for these efforts is identified. Beginning in June 2001, the Agency Director and staff initiated meetings with all 84 local governments to improve communication on a number of issues including the regulation amendments, the JLARC study, the competitive grants program and C2K initiatives. These special meetings have provided an excellent opportunity to gain information on technical and financial assistance needs at the local level for implementing the Bay Act.

The Department also gave a presentation on the relationship of the Bay Act to shoreline management projects at the Tidal Wetlands Workshop held at the Virginia Institute of Marine Science on July 18, 2001. The presentation was a follow-up to previous talks, and is part of an effort by the department to improve understanding of the Bay Act's role in shoreline management. The department is currently working with York County to develop videos on the Bay Act for local Wetlands Boards.

h. Better Site Design

The department's Better Site Design program has continued to be a successful outreach effort. Designed to assist localities in achieving the Bay Act's three general performance criteria (minimizing land disturbance, minimizing impervious cover, and preserving indigenous vegetation), the Better Site Design program is also helping to promote Low-Impact Development, fulfilling several of the state's commitments under the Chesapeake Bay 2000 Agreement.

The department also assisted Virginia Tech in another one-day Water-Sensitive Site Design and Development workshop held in Winchester, Virginia and has agreed to partner with Virginia Tech on more Better Site Design Workshops in the upcoming year. CBLAD will present information on how Better Site

Design and Low-Impact Development can be used to meet both the three general performance criteria and the stormwater requirements of the Bay Act. dis currently working with other agencies to learn more about the impediments to implementing Better Site Design and to find ways to overcome them. This research is a logical progression for building on the existing Better Site Design program. The agency staff has recently given two presentations on this research to a workgroup on Open Space Preservation and Property Rights of the Commission on Growth and Economic Development established by the 2001 Virginia General Assembly and is planning another presentation to the Commission on the Future of Virginia's Environment on Low Impact Development.

On April 4, 2001, the department provided a presentation on Better Site Design in Virginia at the 2001 Environment Virginia Conference. The Better Site Design program was also recognized during the conference as the recipient of the Environmental Innovation award in the category of state and local government for going above and beyond regulatory requirements to improve environmental quality.

i. Polecat Creek Watershed Monitoring Project

In 1993 CBLAD initiated a ten-year project to monitor the water quality of the Polecat Creek watershed in Caroline County. The primary goal of the project is to describe the effectiveness of Bay Act regulations and policies in protecting water quality from the impacts of adjacent urban development activities in the watershed. The study will provide information about the background state of water quality and about the trends in water quality in response to changes in land use and the implementation of local land use regulations. The Polecat Creek watershed lies in the south central section of Caroline County, Virginia. The drainage area is about 30,000 acres and is located in the headwaters of the Mattaponi River, which is one of the main tributaries to the York River. The headwaters rise in the piedmont, flow through the fall zone, and converge with the Mattaponi River in the coastal plain physiography. The predominant land cover in the watershed is forest, followed by open fields and pastureland.

In the period from April 2001 to September 2001, 167 nutrient and 24 biological samples were collected from 4 surface water quality monitoring stations. Regular update and maintenance of data loggers, water samplers and the weather station was conducted. Annual calibration of monitoring equipment was completed. Stream flow data was submitted to DEQ for rating curve refinements. Stream segments near QPA and QPB monitoring stations were cleared for fallen trees. Invertebrate samples were collected in May and July from regular and reference sites. Fish sampling were completed in May. The samples were picked and laboratory identifications were completed for the winter and summer samples. Data was entered in the database and field records were archived. Ground water levels were measured from all transect wells at 4 to 6 weeks time interval. Water quality samples were collected in June from all groundwater transect wells. Also, water quality samples were collected from 14 wells in September. During the period, descriptive analysis of stream flow and nutrient data was completed. Nutrient concentration data was analyzed on a monthly and annual time-scale basis. The data collection was started for hydrologic model calibration. A seasonal stream flow model was used for surface flow computations. Project proposals for FY'02 were prepared and Agreements with all contractors (DEQ, USGS, Virginia Tech, VCU and DCR) were completed. A presentation on buffer and groundwater discharge was made to Metropolitan Washington Council – Forest group. The project records and documents were updated.

j. Geographic Information Assistance

CBLAD provides full GIS technical services to Tidewater localities and educational institutions as a means of improving implementation of the Bay Act and gauging program effectiveness. The department is deploying a sophisticated GIS utilizing geographically registered vector, raster, and image data for internal

agency use. Additionally, an Internet mapping service will be established with similar spatial processing and analytical capabilities for remote client access. Full geo-data vector library is complete for Tidewater localities.

CBLAD utilizes federal and state GIS data, as well as, in-house generated and enhanced digital data sets. These data include: VDOT County Maps Series, USGS DEMs and DLGs, NWI wetlands data, USDA SSURGO soils data, and Census Bureau TIGER data. In-house data include land use and zoning coverages for specific project areas and regional environmental studies. Principle GIS project is the Polecat Creek watershed land use and water quality study. Analytical GIS applications have been developed for watershed modeling, soil erosion analysis and wetland identification. Analytical applications and geographic data are scheduled for Internet deployment by end of 2001.

k. State Response to the Chesapeake Bay Program

CBLAD staff has been intricately involved in the various activities of the interstate Chesapeake Bay Program. The Department has been asked to play a significant role in these efforts because of our expertise in land use planning and management and in the area of nonpoint source pollution control.

CBLAD staff is currently participating with other state agency staff and with the Bay Program to develop recommendations and strategies for working with local governments and others to implement the commitments of the Chesapeake 2000 Agreement (C2K). A department staff member serves as the Virginia inter-agency team leader for the Development, Redevelopment and Revitalization. Coordination among agencies within the state is accomplished through many inter-agency bodies such as the Virginia Chesapeake Bay Interagency Workgroup, Nonpoint Source Advisory Committee, the Watershed Planning and Permitting Coordination Task Force, the VDOT interagency project review committee, and the Coastal Policy Team. Some of the C2K commitments directly address goals and policies already incorporated into the Chesapeake Bay Preservation Act and regulations. Other commitments require additional resources or programmatic expansions to accomplish them. CBLAD staff was the principal author of Section 4.2, Development, Redevelopment and Revitalization, of the Secretary of Natural Resources annual report on Virginia's efforts to meet the C2K commitments.

CBLAD staff is directly active in the Bay Program through representation on the Implementation Committee; the Local Government Advisory Committee; the Land, Growth and Stewardship Subcommittee; the Nutrient Subcommittee; the Urban Stormwater Task Force; the Land Data Work Group; the Development, Redevelopment and Revitalization Work Group; the Forestry Work Group; and the Chesapeake 2000 Watershed Commitments Taskforce (CwiC). Of particular note is the Department's involvement with the 4.0 Sound Land Use commitments, especially the 4.2 (Development, Redevelopment and Revitalization) commitments. Significant work in the 4.2 arena centers around 4.2.1 dealing with the "harmful sprawl" issue; 4.2.7 dealing with ecologically sensitive design and a resulting reduction in impervious cover. This latter item is directly tied to the department's better site design and associated project dealing with identifying impediment to such design.

CBLAD staff has also been very active in working with the Virginia Legislature during the off-session by making presentations to the Commission on Growth and Economic Development (HJ 671) on better site design and impediments thereto. CBLAD staff has also made presentations on NPS and stormwater quality management to the Commission on the Future of Virginia's Environment (SJ 373).

CBLAD staff actively participated in the development of tributary strategies, acting as team leaders, drafting strategies, etc. in the late 1990's. The Department of Conservation and Recreation now operates regional watershed management offices in each of the tributary basins and has formed watershed roundtables, which will serve to maintain the involvement of local officials, citizens and stakeholders throughout the implementation of the tributary strategies. CBLAD staff members have continued to work with DEQ and DCR staff on the development of the Interim Nutrient Cap Strategy for the Shenandoah and Potomac Basins. A draft of the strategy was released for public comment in March 2001. In addition, CBLAD continues to be involved in the Eastern Shore Tributary Strategy Program as a co-team leader.

As the tributary strategy program has begun to shift its focus to the more comprehensive watershed and end-point indicators approach, CBLAD staff has been active through participation in the York Watershed Council, the Potomac/Shenandoah Watershed Council, and the various James River Forums. More specifically, CBLAD has been involved with the Friends of the Rappahannock in the coordinated Bay Program and Watershed Programs dealing with local approaches to water quality assessments, planning, and regulation.

8. USGS Nutrient Trend Analyses

During 2000, the U.S. Geological Survey (USGS) released a report of the factors affecting the trends in nutrient concentrations and loads in the Rappahannock, York, and James River basins. In cooperation with the Virginia Department of Environmental Quality, the USGS has been collecting streamflow and water-quality data in these basins since the mid-1980's to calculate loads and trends of nutrients entering Chesapeake Bay.

This latest assessment, contained in *USGS Water-Resources Investigations Report 00-4218*, includes information on changes in contributions from major nutrient sources from the Chesapeake Bay Program's Watershed Model and additional spatial detail on the distribution of nutrient yields in the basins from the USGS Spatially Referenced Regressions on Watershed attributes (SPARROW) model. In addition, data on nutrient sources, basin characteristics, implementation of management practices, and ground water inputs to surface water were analyzed to help explain the trends in the monitoring data.

The major factors affecting the trends were found to be changes in nutrient sources and natural variations in streamflow. The dominant source of nitrogen and phosphorus from 1985 to 1998 in these basins was determined to be of agricultural origin. As a result, changes in agricultural nutrient sources such as manure and fertilizer, combined with decreases in agricultural acreage and implementation of best management practices, led to many downward trends in flow-adjusted nutrient concentrations – trends unaffected by natural variations in streamflow. Urban acreage and population, however, were noted to be increasing in these basins and, as a result, delivered loads of nutrients from urban areas increased during the study period.

While the effect of nutrient management is evident in these downward trends in flow-adjusted concentrations, there have been relatively few significant reductions in the load of nutrients entering the bay from these basins, which is due in large part to natural increases in streamflow during the study period.

The Chesapeake Bay Program, in cooperation with the USGS Maryland District, is currently beginning the development of Phase 5.0 of the Chesapeake Bay Watershed Model. The Phase 5.0 model is proposed as a substantial revision to previous phases of the Watershed Model. The most significant aspect of the proposed revision is an increased model segmentation that will dramatically improve model accuracy

at the local level.

The Department of Conservation and Recreation has signed a joint funding agreement with the USGS Virginia District to coordinate with the Chesapeake Bay Program in extending the Phase 5.0 Watershed Model to the portion of Virginia outside of the bay drainage. The specific objectives of the project are to 1) collect hydrologic and land use data necessary for the development of a nutrient and sediment loading model for the southern rivers portion of Virginia, 2) act as a cooperator with the Bay Program and improve certain specified aspects of the Phase 5.0 for the entire area covered by the model, 3) collect the necessary data required for extension of the SPARROW model to the remainder of Virginia, 4) assist the Bay program in the calibration of the Phase 5.0 model with particular attention paid to the southern rivers portion of Virginia.

The timeline for the development of the Phase 5.0 Watershed Model is as follows:

Oct. 2001 – Dec. 2001	Assemble data for hydrologic component of model
Jan. 2002 – June 2002	Perform calibration of the hydrologic model
June 2002 – June 2003	Assemble data for water quality component of model
June 2003 – Dec. 2003	Perform calibration of the water quality model
Jan. 2004 – March 2004	Begin Phase 5.0 model scenario runs
April 2004 – Sept. 2004	Produce report documenting the Virginia model

For more information contact Doug Moyer (dmoyer@usgs.gov) at (804) 261-2634, or visit the following website: http://va.water.usgs.gov/chesbay/rimp/index.html

9. USDA Forest Service - Potomac Watershed Partnership

The Potomac Watershed Partnership is a large-scale restoration and stewardship project, with the mission of creating a collaborative effort among federal, state, and local partners to restore the health of the land and waters of the Potomac River Basin. The primary partners are the USDA Forest Service, the Virginia Department of Forestry, the Maryland Forest Service, Ducks Unlimited, and the Potomac Conservancy. In Virginia, efforts have initially focused on the Shenandoah River Watershed.

The Partnership aims to reduce nonpoint source pollution and improve aquatic habitats through the restoration of riparian forests and wetlands. Accomplishments in the first year of the partnership include:

- Improved range allotments on the George Washington and Jefferson National Forests with stream bank stabilization, riparian plantings, and cattle fencing
- Conducted stream bank stabilization and riparian buffer plantings, working with state institutions such as correctional facilities
- Created trout habitat and fly-fishing streams, working with state and federal biologists
- Continued to develop riparian planting at the Frontier Culture Museum

In the Shenandoah River Watershed, 61 miles of riparian buffers were established in 2001, mainly through the Conservation Reserve Enhancement Program (CREP); and 12 acres of wetlands were restored.

The partnership also has been involved in watershed education and monitoring. For example, seminars were conducted to inform landowners of conservation opportunities available through CREP. A team of scientists developed and initiated a monitoring protocol to be used at all partnership restoration and

improvement sites.

10. Virginia Department of Transportation

The Virginia Department of Transportation (VDOT) is responsible for building, maintaining, and operating the 56,500 miles of road, 11,700 bridges and 6 tunnels that comprise the nation's third-largest state-maintained highway system. Through the Commonwealth Transportation Board (CTB), VDOT provides funding for airports, seaports, rail, and public transportation. VDOT is also responsible for four underwater crossings, two mountain tunnels, two toll roads, one toll bridge, four ferry services, 41 rest areas, 10 welcome centers, and 107 commuter parking lots.

With roughly 10,000 employees, VDOT is one of Virginia's largest state agencies. VDOT specifications require a Department of Conservation and Recreation (DCR) certified erosion and sediment control inspector on project construction sites during land disturbing activities. The department has spent approximately $30,363,940 on Construction Monitoring/Roadside Development over the past year. Last year, DCR developed and implemented a statewide contractor training and certificate program for erosion and sediment control, which VDOT required of all contractors working on VDOT projects. Since this programs was implemented, over 2,400 contractors and VDOT employees have received erosion and sediment control training – the most comprehensive of only three such programs in the United States. VDOT's erosion and sediment control program is an essential element in the commonwealth's efforts to control stream sedimentation and improve water quality throughout Virginia.

During 2001, sixteen drainage design personnel completed a 92-hour VDOT Hydraulics Section and administered a Drainage Design Course which included sessions on stormwater management and erosion and sediment control practices. Approximately $4,813,000 was spent in 2001 on the BMP implementation of stormwater management basins. In excess of 16 VDOT SWM facilities were installed and over 10 underground storage tanks have been removed, in association with road construction projects, during 2001.

In addition to the erosion and sediment control and stormwater management programs, VDOT is active in riparian buffer and wetland construction, restoration and preservation. VDOT has consistently partnered with other state and federal agencies and environmental awareness groups to collect willows to be planted along stream and river banks to re-establish natural riparian buffers to improve water quality through out Virginia. VDOT has developed a manual of comprehensive practice for the mitigation of wetland impacts in transportation projects and for the creation of new wetland sites. The implementation of these practices is essential in replacing wetland losses in Virginia and in the effective management of approximately 500 acres of wetland constructed by VDOT statewide since 1972.

VDOT pioneered the use of innovative and nationally recognized natural stream stabilization and design techniques in Virginia. The department took a leadership role by training a team of environmental and hydraulic engineers in natural stream design, the only team of its kind in the United States to work together on a statewide basis. For transportation projects, naturally stabilized and designed streams require substantially less maintenance than waterways with artificial channels. The methods have the potential of saving millions of dollars in maintenance costs while enhancing water quality for all of Virginia's citizens.

11. Virginia Department of Health (VDH)

a. The Division of Onsite Sewage and Water Services

The Division of Onsite Sewage and Water Services is anticipating continued program improvement through three proposed regulatory changes. One is the promulgation of AOSE (Authorized Onsite Soil Evaluators) Regulations. AOSEs are individuals, certified by VDH, who evaluate sites for onsite systems and prepare application packages for approval or permitting from the local health department. A second regulatory change is providing criteria for mass drainfields (flows greater than 1200 gallons per day) and for allowable rock content below the absorption trench bottom. The third area of proposed change is a "footprint" regulation. An ad hoc committee is currently working to define a way to size absorption areas depending upon the degree of treatment, which includes operation and maintenance. When these proposed changes become reality, citizens and industry can expect a second permitting track to develop with alternative systems and performance-based regulations. The onsite regulatory program is being re-defined in keeping with consumer demands, innovative technology, and VDH's public health mission.

b. Marina Program

The marina program provided sanitary surveillance to approximately 1200 boating facilities in the commonwealth this past year, ensuring that clean rest rooms, working sewer systems and boat sewage waste receiving stations were provided. Seven new and 13 replacement sewage pump-out stations were provided at boating facilities utilizing funds from the Clean Vessel Act Grant. Twenty-five boating facilities were accepted into the Boating Infrastructure Grant program to improve their facilities that serve transient boaters. The marina program provided technical assistance to the Marina Technical Environmental Assistance Committee and the Clean Marina Program which are both new programs to the DCR.

c. The Division of Shellfish Sanitation

The Division of Shellfish Sanitation actively surveys the watersheds of shellfish growing areas for potential sources of point and nonpoint source pollution that might constitute a public health concern. Division personnel visit every property on the watershed that is not connected to a sanitary sewer and that are close enough to tidal water or a free flowing stream to impact the shellfish growing waters. Personnel check every onsite sanitary waste facility (*e.g.*, septic tank, pit privy) and issue a notice for needed correction to the property owner if the facility is failing. The local health departments also receive a copy of this notice and obtain correction. The division develops a report with a map that indicates the location of all problems found, and this report is shared with state agencies that have responsibility for problems found. For example, when cattle have access to a stream or tidal water, the division sends a copy to DCR for their information. In fiscal year 2000 - 2001, the division inspected 8,939 properties and produced 14 reports.

IV. FUTURE FUNDING NEEDS

As required by the WQIA, this report presents information related to future funding needs. Estimating these needs is a complex endeavor that requires extensive information about the health of waters throughout the commonwealth. Within the Chesapeake Bay watershed, Virginia is fortunate to have tributary strategies completed. As a result, it is possible to estimate the costs

of addressing nonpoint source pollution management. Within the Rappahannock, York, James, and Eastern Shore and Coastal Basin it is estimated that $720 million will be required to meet established water quality goals by the year 2010. In addition to these costs, cooperating parties are required to provide matching funds. As a result, total implementation costs will be higher.

Within the Shenandoah and Potomac Rivers, tributary strategy implementation has been completed. Therefore, the focus of nonpoint source pollution control will be on maintaining nutrient reductions that have already been achieved and on addressing any additional pollution reductions needed for the health of the Potomac River estuary.

A cooperative nonpoint source pollution control program and watershed-based approach, as described in the Cooperative Watershed Initiatives section of this report, is being implemented in the Southern Rivers. Prior to this initiative, the Southern Rivers area of the commonwealth did not have a comprehensive process, such as Tributary Strategies, that would bring stakeholders together to establish goals and objectives for controlling nonpoint source pollution. The focus on developing cooperative programs in the Southern Rivers area is expected to increase interest from localities to apply for grant funds to implement water quality improvement projects. The watershed basin plans that result from these efforts will provide information that will assist in determining future funding needs.

The Department of Environmental Quality completed a ten-year Implementation Plan in November 2000 for developing and implementing the Total Maximum Daily Load (TMDL) Program in Virginia. The study identified 600 impaired waters in Virginia that will require TMDL action by the year 2010. Among the 600 impaired waters are 260 impaired shellfish waters. The study estimated in excess of $33 million in personnel and contractual costs for DCR for developing TMDLs and their associated implementation plans. In addition, the study estimated the cost for implementing best management practices (BMPs) to attain water quality standards at $400,000 to $800,000 per watershed. Excluding shellfish TMDLs, overall TMDL implementation could be in the range of $150 million to $300 million. The costs for implementation are very preliminary, are based on limited information, and are primarily based on agricultural watersheds. Implementation costs in urban areas on a per watershed basis could be much higher.

DCR staff anticipates ever-increasing public interest in groundwater issues and encourages the incorporation of groundwater data into watershed plans and TMDL studies. Virginia does not yet have a network for collecting groundwater data on a statewide basis and needs funding for demonstration projects aimed at adequately and cost-effectively monitoring land uses suspected of contributing nonpoint source pollution to groundwater in karst areas as well as in other parts of the state.

The Commonwealth of Virginia has made outstanding progress in protecting and restoring the health of its rivers, streams, lakes, and the Chesapeake Bay through a substantial infusion of state and federal funding resources in recent years. However, with budget uncertainties and no new funding available for the Water Quality Improvement Fund, measurable environmental results will likely be significantly reduced for 2002 as compared to recent years. In order to meet the difficult challenge of restoring the health of impaired waters and the Chesapeake Bay, the commonwealth will have to maintain and build on the progress made in recent years.

Department of Conservation & Recreation

CONSERVING VIRGINIA'S NATURAL AND RECREATIONAL RESOURCES